

Evaluating Applied Theatre Using Amateur Community Actors as a Modality for  
Pedestrian Education Among Primary School Students in Moshi, Tanzania

by

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Thesis submitted in partial fulfillment of  
the requirements for the degree of Master of Science  
in the Duke Global Health Institute  
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2014

ABSTRACT

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## **Abstract**

**Background:** The WHO estimates that in 2010 there were over 10,000 Road traffic injury related fatalities in Tanzania. Pedestrians accounted for a third of those fatalities. Education is essential to improving Tanzanians' road safety.

Theatre has been used as a modality for education for many years, though most efficacy research focuses on professionally created and delivered theatre. The act of creating theatre is an inherently collaborative process, making it a good tool for participatory interventions that involve community members.

Collaborative, theatre-based interventions have several benefits for global health projects: 1) they are low-cost; 2) they incorporate community ideas encouraging stakeholder investment; 3) they bypass potential barriers of education and literacy; and 4) they have potential to be self sustaining after development aid has stepped away. However, there are two main impediments to using collaborative theatre in global health interventions. First, there is little investigation on the efficacy of collaborative theatre to educate. Second, there are few guidelines to help drama-based programs take advantage of collaboration with amateur community members for health topics.

This study combined qualitative and quantitative methods to understand how participatory theatre with amateur community participants can convey health topics such as road and pedestrian safety in Tanzania. The study measured local primary students' pedestrian knowledge, evaluated theatrical performance



as a method to teach pedestrian safety, and explored how community members could use drama techniques to become advocates for road traffic injury prevention. This project sought to adapt a replicable framework of applied theatre exercises to address health issues in a collaborative manner between community members and educators.

**Hypothesis:** Participatory theatre will increase pedestrian knowledge among primary students.

**Methods:** Young adult volunteers from Moshi, Tanzania participated in a month long workshop, *Kutenda Kwa Usalama Barabarani* (KKUB), to create a performance to teach road and pedestrian safety. KKUB was evaluated through qualitative methods, including journaling by the workshop facilitator, daily informal group discussions, and performance response cards from community leaders. At the end of the project, 17 open-ended surveys were administered in Kiswahili among the participants. A focus group with 8 participants was also conducted at the end of the project. A follow up focus group was conducted four months following the end of the project.

KKUB participants presented their play in Kiswahili to local primary schools. Knowledge assessment surveys were administered in Kiswahili to 439 primary school students. Pre- and post-knowledge assessment surveys were utilized to measure the impact that the community created play had on students' pedestrian knowledge.

**Results:** Primary school audiences showed statistical improvement between their pre- and post-survey scores. The average mean score improved from 71.40% of the pedestrian knowledge items correctly answered to 84.39% ( $P > |z| = <0.0001$ ). The open-ended KKUB participant surveys and focus groups identified factors that contributed to the play's impact, including feelings of self-efficacy, teamwork, and ownership of the work.

**Conclusions:** The collaborative theatre intervention achieved increases in pedestrian knowledge. Using drama-based exercises, community participants created their own performance to teach pedestrian knowledge. The process helped community participants to become stronger advocates for road safety. We suggest that the applied theatre framework can be repeated with other social, health, and development issues to empower communities with limited available resources in the global health sphere.

## Dedication

This is dedicated to all the members of *Kutenda Kwa Usalama Barabarani* (Act for Road Safety) for their hard work, dedication, and willingness to *sauti kubwa kama kichaa!* (Make a loud and crazy noise!)

## Table of Contents

Abstract.....	iv
List of Tables .....	xii
List of Figures .....	xiii
Acknowledgments.....	xiv
1 Introduction .....	1
1.1 The Issue: Road Traffic Injuries in Tanzania.....	1
1.1.2 An Aside: Moshi Residents Take Action.....	4
1.2 Interventions for Road Injury Prevention and Pedestrian Safety .....	5
1.2.1 An Aside: Traditional Education for Road Safety in Tanzania .....	7
1.3 The Tool .....	10
1.3.1 Theatre arts for behavior interventions .....	10
1.3.2 Models of theatre interventions .....	12
1.3.2.1 Scripted theatre interventions .....	13
1.3.2.2 Theatre-based workshop interventions .....	14
1.3.2.3 Interactive or improvisation theatre interventions .....	15
1.3.2.4 Professional vs. Amateur Actors .....	16
1.3.3 Comparing theatre models for health interventions .....	17
1.4 The Tool: Applied Theatre in Theory.....	18
1.5 Applied theatre in RTI prevention .....	22
2 Objectives .....	23
2.1 General Objective .....	23
2.2 Specific Objectives.....	23
3 Methods .....	24

3.1 Study Design and Participants .....	24
3.2 Ethical Consideration .....	25
3.2.1 Informed consent.....	26
3.3 KKUB Participants.....	26
3.4 School Participants .....	27
4 Kutenda Kwa Usalama Barabarani, The Drama Workshop .....	29
4.1 Explore the problem, experiment with solutions.....	29
4.2 Curriculum in Depth .....	31
4.2.1 Stage One: Introduction/ Familiarization .....	33
4.2.2 Stage Two: Data Collection/Analysis.....	34
4.2.2.1 Road Traffic And Pedestrian Safety Lessons .....	35
4.2.3 Stage Three: Theatre creation.....	36
4.2.4 Stage Four: Theatre Performance .....	37
4.2.5 Stage Five: Post Performance Reflection.....	38
5 Results: School Performance Intervention .....	41
5.1.1 Kaloleni Primary School: October 8 <sup>th</sup> 2013.....	41
5.1.2 Muungano Primary School: October 9 <sup>th</sup> 2013 .....	45
5.1.3 Mandela Primary School: October 10 <sup>th</sup> 2013.....	47
5.1.4 Mwenge Primary School: October 11 <sup>th</sup> 2013.....	50
5.2 Performance Data Collection and Analysis.....	53
5.2.1 Performance Evaluation .....	53
5.2.2 Performance Evaluation Analysis .....	54
5.3 Discussion of Primary Student Test Results .....	60
5.3.1 General test scores.....	60

5.3.2 Road Safety Concepts.....	60
5.3.3 Differences Between Schools.....	63
6 KKUB Workshop Results.....	65
6.1 KKUB Data Collection and Analysis.....	65
6.2 KKUB Participants.....	65
6.3 KKUB Results Discussion .....	68
6.3.1 Can drama exercises guide community members to collaboratively assess local problems and find solutions? .....	70
6.3.1.1 Teamwork and Collaboration .....	70
6.3.1.2 Collaboration vs. Competition .....	71
6.3.1.3 Seriously Competitive or Serious Educator .....	74
6.3.2 Can amateur community participants create an educative performance play on road traffic injuries through dramatic exercises .....	79
6.3.2.1 Road Traffic Injuries, From Acting Games to Teachable Lessons	79
6.3.3 Does a play created by amateur community members have the capability to provide education? .....	83
6.3.3.1 Test score results.....	83
6.3.4 Is a community driven drama intervention appropriate when providing pedestrian education? .....	85
6.3.4.1 This is Our Chance .....	85
6.3.4.2 Our Truth is Better Than the Professional Fiction.....	86
6.3.4.3 Controlling the Message .....	87
6.3.4.4 Contradiction? Show Me the Money .....	89
6.3.5 Will a drama-based workshop encourage young adult community members to be better educators and advocates for their community?.....	90
6.3.5.1 Contributing to KKUB .....	90
6.3.5.2 Contributing to the Community .....	92

6.3.5.3 Self Efficacy and Becoming a Community Leader .....	94
7 Discussion .....	96
8 Limitations.....	100
8.1 Comparison Group and Knowledge Assessment Survey Validity.....	100
8.2 Behavior Change vs. Education Change .....	102
8.3 Drama Limitations .....	102
9 Going Forward .....	104
Appendix A: Road Map of Kilimanjaro Region.....	106
Appendix B: KKUB Exercises .....	107
Example of warm-up exercises .....	107
Example of stage one activity .....	108
Example of stage two activity .....	108
Example of stage three activity .....	110
Appendix C: The Play .....	112
Play Transcription .....	113
Appendix D: Pedestrian Knowledge Survey .....	121
Appendix E: Sample of theatre-based interventions for health topics .....	123
Bibliography .....	126

## List of Tables

Table 1: School Population .....	54
Table 2: Distribution of students by age and gender .....	55
Table 3: Pre- and posttest results by school.....	56
Table 4: Linear model predicting average post-score by school .....	56
Table 5: Significance of test score change by question, all schools combined ...	57
Table 6: Kaloleni significance of score change by question .....	58
Table 7: Muungano significance of score change by question .....	58
Table 8: Mandela significance of score change by question .....	59
Table 9: Mwenge significance of score change by question .....	59
Table 10: Pedestrian lessons learned .....	62
Table 11: KKUB demographics, ages.....	66
Table 12: KKUB demographics, household size .....	67
Table 13: KKUB demographics, education .....	68
Table 14: KKUB demographics, road traffic injury.....	68
Table 15: Problems identified during exercises .....	79
Table 16: Solutions identified during exercises .....	80



## List of Figures

Figure 1: Map of Tanzania with Moshi marked .....	3
Figure 2: Models of theatre interventions .....	12
Figure 3: Arial view of Kaloleni .....	43
Figure 4: Kaloleni students guess the meaning of street signs .....	43
Figure 5: Teacher disrupts performance at Kaloleni .....	44
Figure 6: Performance at Kaloleni Primary .....	44
Figure 7: Arial view of Muungano Primary School .....	46
Figure 8: Main building at Muungano Primary .....	46
Figure 9: Performance at Muungano used a raised platform .....	47
Figure 10: Arial view of Mandela and Azimio Primary Schools .....	49
Figure 11: Mandela Primary School grounds .....	49
Figure 12: Huge audience at Mandela Primary School .....	50
Figure 13: Arial view of Mwenge Primary School .....	51
Figure 14: Mwenge students take pre-test with non-tested students watching ...	52
Figure 15: Performers create a motorcycle at Mwenge .....	52
Figure 16: Performance at Mwenge Primary .....	53

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*Lord, we know what we are, but know not  
what we may be.*

*Hamlet (IV.v.42-43)*

# 1 Introduction

## 1.1 The Issue: Road Traffic Injuries in Tanzania

In 2004, the WHO identified road traffic injuries (RTI) as the leading cause of death among 15-29 year olds and the second cause of death among 5-14 year olds globally. By 2030, traffic injuries will likely be the 5<sup>th</sup> leading cause of death in the world [1, 2]. The 2013 WHO Global Status Report on Road Safety showed that the actual number of traffic related fatalities did not rise significantly from 2010. However, while nearly all high-income countries decreased traffic deaths between 2007 and 2010, many middle-income and nearly all low-income countries had an increase in road traffic deaths [2]. The most dangerous situation is in the African Region where there is the highest risk of dying after RTI (24 per 100,000 population) [2]. Recognizing these alarming road traffic injury trends around the world, the UN declared 2010-2020 the “Decade of Action for Road Safety.” In the 2013 Global Status Report on Road Safety, the WHO stated that, “addressing the safety of pedestrians, cyclists, and motorcyclists is critical to successfully reducing the total number of global road traffic deaths”[2].

Tanzania is greatly affected by road traffic injuries. In 2010, an estimated 3.4% of Tanzanian GDP was lost due to road traffic crashes [2]. Tanzanian police records show that traffic deaths rose steadily nearly every year since 2001 and listed 3,582 deaths due to RTI in 2010. However, the WHO suggests that this number grossly underrepresents actual RTI in Tanzania, estimating 10,162

(95% CI 8,891-11,431) RTI fatalities for the year.<sup>1</sup> Pedestrians account for 33% and cyclists for 13% of reported road deaths in Tanzania [2].

Although this is the fourth year of the UN's "Decade of Action for Road Safety," Tanzania has made limited progress in improving national road safety. In 2009, the Ministry of Infrastructure Development published a National Road Safety Policy for Tanzania and called for the creation of a National Road Safety Fund [3]. The policy declared a "five E strategy" to reduce road traffic injuries: 1) engineering and traffic environment, 2) education and information, 3) enforcement and legislation, 4) emergency response, and 5) evaluation and other comprehensive actions [3]. This report brought attention to national speed limits, drink-driving laws, and motorcycle helmet and seat belt requirements. However, these laws are poorly enforced, if at all. On a scale of 0-10 with 10 being the strictest, the WHO ranks Tanzania's enforcement capabilities between two and four [2]. Despite the recognition of need, government implementation has fallen short.<sup>2</sup>

---

<sup>1</sup> Tanzania does not have WHO eligible death registries. As such, The WHO Global status report on road safety 2013 used a regression model to estimate total road traffic deaths. Regression modeling information can be found on p49 of the report.

<sup>2</sup> There have been efforts to improve road safety education, but these have come from non-governmental organizations and private companies. For example, in Tanzania events for the UN's Global "Road Safety Week" in 2013 and 2012 were primarily sponsored by the private companies Airtel, Puma, and BeForward.JP (Japanese car exporter). Held in Dar es Salaam, one event was hosted by the Helmet Vaccine Initiative Tanzania (a local NGO arm of the Asia Injury Prevention Foundation) and the other was hosted by Amend (a USA not-for-profit and registered Tanzanian NGO) .



Figure 1: Map of Tanzania with Mosh marked

Our study took place in the semi-urban city of Mosh in the Kilimanjaro region of Tanzania. One major thoroughfare, the Arusha-Himo Road or A23, connects Mosh to Arusha, the closest major urban city, to the west and Voi, Kenya in the east (Appendix A: Road Map of Kilimanjaro Region). The municipality has many paved roads, especially towards the center of town and near more expensive residencies, however these quickly give way to dirt roads throughout the region. The Mosh Municipal population was estimated at

184,292 people in a 2012 census [4]. Moshi is the 15<sup>th</sup> largest municipality in Tanzania. It is only 50 miles from Arusha, the third largest city in Tanzania, with over 400,000 people [4].

Moshi is not the most developed area of Tanzania, however there are many sources of traffic to the city. It has several manufacturing industries, including TPC Limited (sugar), Bonite Bottlers (Coca-Cola bottling plant of sodas and water), Kibo Breweries (malting plant for Tanzania Breweries Limited), and Serengeti Breweries Limited (second largest Tanzanian brewer) [5-9]. These plants generate significant large shipping truck traffic into Moshi. Moshi is also home to the tourist destination Mount Kilimanjaro. From 2011 to 2012, 57,456 tourists entered the Mount Kilimanjaro park, though not all of these tourists will have passed through Moshi [10].

Though there is not specific surveillance data, a 2012 analysis of traumatic injuries presenting to the Kilimanjaro Christian Medical Center referral hospital in Moshi, found that 43.9% of injuries were related to road traffic incidence [11]. A preliminary analysis of pediatric data suggests that 20.3% of children under 16 presented to KCMC due to road traffic injury. Of those injuries, 47.2% were pedestrians [11]. Similar to the national situation, Moshi has no local strategy to improve road safety and no pedestrian education policy.

### **1.1.2 An Aside: Moshi Residents Take Action**

There is anecdotal evidence of residents speaking out against the increasing vehicular deaths. One night in November 2011, a large crowd

disrupted the major and only thoroughfare between Kilimanjaro International Airport and Moshi (near Kibosho Road). People put large rocks across the highway and congregated densely so that no traffic could pass. Traffic in both directions was stopped for many miles and only resumed after police arrived and fired warning shots to disperse the crowd. There was no local, regional, or national media coverage of the event. During the event it was not clear what was being protested. In later personal conversations, a taxi driver reported that the people were protesting illegal high-speed driving that routinely takes place on the highway, drawing attention to the numerous fatalities at this location, and were calling for speed humps [\[12\]](#). Eventually speed humps were installed in the road, however there is no local enforcement to ensure that large trucks, buses, and large four-wheel-drive vehicles do not speed over the humps, while small cars and *dahla-dahlas* (small public transport buses) must slow significantly. The situation is still very dangerous and results in accidents year round.

## **1.2 Interventions for Road Injury Prevention and Pedestrian Safety**

The WHO's 2013 Global Status Report on Road Safety identified action areas that all countries should focus on to reduce injury and death on the road. These include legislation to control speed, reduce drinking and driving, and improve seatbelts and child restraints. The WHO report also recognizes that improving "the safety of pedestrians, cyclists, and motorcyclists is critical to reducing the total number of global health traffic deaths." As Towner and Dowswell highlight in their systematic review, injury prevention has a vast range



of possible preventative activities [13]. Well-enforced traffic laws and environmental modifications that physically separate pedestrians from traffic are the most consistently effective interventions. However, these interventions are often expensive, localized, and politically motivated in their placement [14]. As lower income countries develop national action plans for reducing road injuries, they must evaluate which strategies from high-income countries are appropriate for their communities [15]. In this context, education and behavior modification strategies provide important, less expensive interventions that can support the ongoing evolution of a national action plan.

Systematic reviews of educational programs for road safety have shown modest improvements in knowledge and behavior [14]. One intervention that has had success in the United States is the WalkSafe program, a 3-day educational curriculum for primary school students. At 30 minutes per day, the curriculum includes a teacher led discussion with vocabulary lessons, an instructional video, and guided outdoor play [16]. This curriculum has shown improved pedestrian knowledge among students, though they have not yet been able to demonstrate sustained behavior change among the students [14]. Systematic reviews on road safety behavior have shown that other traditional educational programs also had difficulty reporting behavior change among participants [17].

Klassen's review of road safety interventions noted some programmatic elements that were associated with behavior changes: tailoring a program uniquely to the community; including community stakeholders in the development; and incorporating an element of peer pressure in the



implementation. Peer pressure or the opinions and reactions of a target group's friends and acquaintances, he notes, is especially impactful when targeting adolescent behavior [17]. Some studies have investigated how teaching children vehicle safety can help influence an entire family's behavior, such as wearing seatbelts [18, 19]. Both Klassen and other studies have noted that incorporating an element of role-play into education interventions encourages modeling behavior in pedestrian education [17, 19, 20].

While improved legislation, enforcement, and trauma services are the most crucial long-term steps in reducing road traffic fatalities, education and activism have potential to make an immediate impact on public knowledge and behavior. At this time, no portion of Moshi's local or Tanzania's national budget is designated for road safety. Tanzanians are in need of immediate, low-cost solutions. Drama interventions, and in particular applied theatre based methodology, can provide communities with easy to implement programming to quickly spread ideas and information about many health and community topics. Though we do not expect drama to be the solution to road traffic injuries, this study aims to demonstrate how a community can employ applied theatre as an effective modality in pedestrian education, while providing a framework for using this tool in future community-driven projects.

### **1.2.1 An Aside: Traditional Education for Road Safety in Tanzania**

Education programs should be used to improve road traffic safety in Tanzania. In the 2009 National Road Safety Policy for Tanzania, the Ministry Of

Infrastructure Development recommended improving education and information as one of the five strategies to reduce road traffic injuries [3]. A road and pedestrian safety curriculum could be taught at the primary school level. As primary school in Tanzania is free, the curriculum would potentially reach most children. However, no formal road safety education curriculum has been implemented.

There are several problems with relying on the public education system for improving pedestrian knowledge at this time. The three most significant issues are expense, class-size, and students' information uptake. Though the government provides primary school free, the system imposes heavy fees that children must provide to attend or they are sent home. These fees include, though are not limited to, desk fees, grounds cleaning fees, book fees, and security fees. The poorest of the community are still prevented from attending school because of this fee structure [21]. Another problem is class sizes, which diverge widely in public schools because of a teacher shortage. The Tanzanian Teachers' Union claims that at the primary school level there is a shortage of over 150,000 teachers [22]. The government reports that there are 40 primary students to every one teacher, however others document average class sizes from 60 to 120 students in a single classroom [21, 23, 24].

Primary school students must pass a set of standardized final exams in order to progress to secondary school. While 70.5% of students passed their primary level exams in 2006, this figure has dropped steadily every year since then [24]. In 2012, over 65% of primary school students failed their form four

(secondary school) examinations, while another 20% scored a division IV [25]. These children will not be able to proceed in secondary school without retaking the exam. Not only are children not advancing to higher levels of school, but it has also been reported that half of the children who do complete primary school cannot read either of the two national languages: English or Kiswahili [25].

Despite these difficulties with the public schools, Amend, an American non-profit and registered NGO in Tanzania, has shown that with sufficient resources traditional pedestrian education can be taught in Tanzania [26]. Amend has targeted primary school students in Dar es Salaam, providing a pedestrian education program similar to those found in high-economic settings. They provide road safety lesson plans and informational booklets to selected schools. Amend trains “Road Safety Instructors” to teach a class size of up to 50 children. Though these classes take place during the students’ regular school period, the program is temporary in nature and displaces some other school programming. The program is evaluated using a true/false knowledge retention survey.

Without infrastructure support to address Tanzania’s problems with the current public education system, it is unrealistic to expect public school teachers to successfully add road safety to their curriculum. A program such as Amend’s would be difficult to scale-up without a great deal of financial investment. Until the school system improves, Tanzanians should look to other alternatives to provide education for important health and development topics. Road safety

needs to be addressed now and low-cost, community driven theatre interventions can provide advocacy and education.

### **1.3 The Tool**

#### **1.3.1 Theatre arts for behavior interventions**

Theatre has long been used as an informal tool for education and development. Though the methodology can be diverse, generally the goal of functional theatre, or theatre used for a purpose, is to use drama activity as an agent of change to advance group ideas [27]. Different variants include popular theatre, Theatre for Development, Theatre for Education, and participatory theatre [28-31]. The most famous functional theatre is “Theatre of the Oppressed” originated in 1974 by Augusto Boal as a means to provoke political change and empower South Americans against fear, racism, sexism, and abuse of power [32]. Boal’s ideas evolved as he travelled the world and his collection of dramatic exercises, “Games for Actors and Non-Actors,” published in 1992, is a core training tool for professional entertainment actors, amateur performers, and non-theatrical development groups [33].

Some theatre practitioners believe that drama should only be used to reflect a situation and encourage dialogue among an audience, allowing the audience to form their own conclusions. Others believe that drama should be used to influence attitudes and educate audiences [34]. For the purposes of this study, we borrow Philip Taylor’s “applied theatre,” an umbrella term that encompasses all types of functional theatre, allowing us to pick and choose

activities to best fit our community setting. Applied theatre is a good tool for health education because it focuses on directly influencing individual behavior instead of breaking down broad cultural constructs. As Taylor describes, applied theatre's central principles are to raise awareness on a particular issue, to teach a particular concept, to interrogate human actions, to prevent life-threatening behaviors, and to heal fractured identities through theatre in a nontheatrical setting [35] (p. xxi-xxvii).

Theatre is the art of communicating experiences, ideas, actions, and emotions between a storyteller and a listener. Participants are not limited by literacy or language as stories can be told through physical action, expression, and sound. To be good storytellers, theatre participants must be willing to explore and investigate their own motivations, tactics, and goals as well as the motivations of other people. Drama based interventions educate communities by modeling behavior, while also influencing beliefs through emotion and entertainment. This makes theatre an excellent tool for exploring behavior change, including health and development topics. A popular health topic for drama interventions is HIV/AIDS advocacy and education, especially in Africa where the need is critical but cultural sensitivities hinder frank discussion of sex [27, 36, 37]. Drama interventions have been used to discourage smoking, drug use, and intimate partner violence [38-40]. Other studies have used drama to focus on social skills, anti-bullying, diet, and peer relations (Appendix E: Sample of theatre-based interventions for health topics) [41].

### 1.3.2 Models of theatre interventions

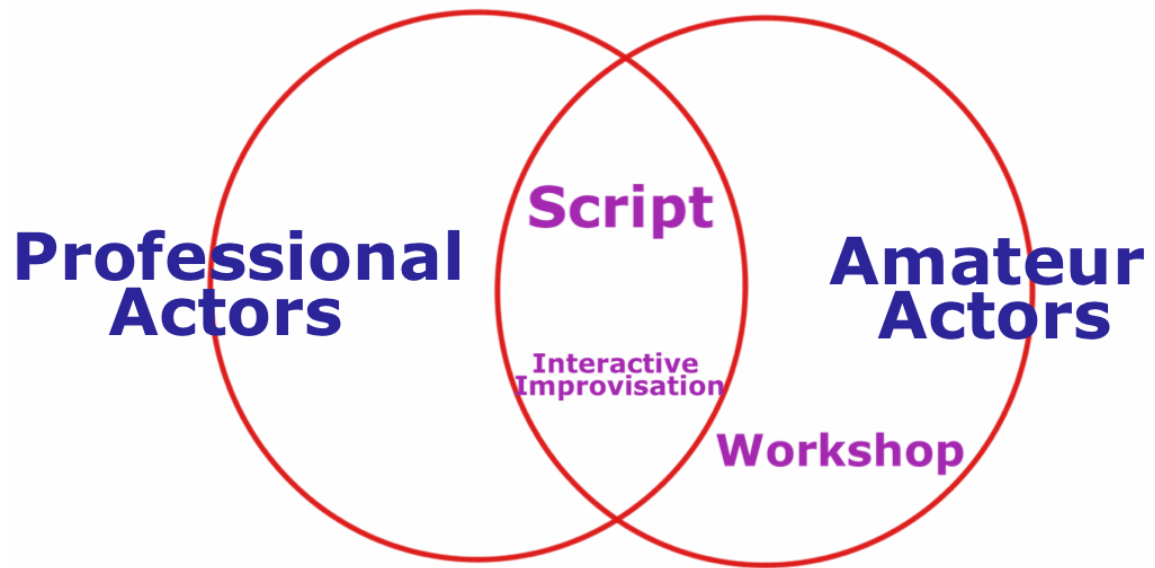


Figure 2: Models of theatre interventions

Regardless of the differences in exact theatre methodology, interventions in the literature generally can be segregated into two categories: those that use professional actors and those that rely on amateur participants (Figure 2). The performance intervention and message delivery is either scripted or interactive. A scripted intervention is the most traditional format whereby the story/plot is written before the performance, memorized, and delivered as planned [36-39, 42-47]. An interactive performance intervention may include scripted portions, but will also include improvisation inspired by audience suggestion or audience participation [48-50]. A third category of theatre interventions uses the workshop format to enable non-professionals to explore ideas, role-play, etc. and may or

may not result in some type of performance (Figure 2). The workshop format may contain elements of drama/art therapy depending on the goals of the intervention [40, 51-56]. Each of these types of theatre-based intervention has demonstrated in the literature examples whereby researchers documented changes of opinion, changes in intention to behave, or changes in knowledge [36-38, 40, 45, 50, 57-64].

#### **1.3.2.1 Scripted theatre interventions**

Compared to other types of theatre interventions, a great deal of literature has been devoted to the evaluation of professionally delivered, scripted performances (Appendix E). Some examples include the scripted plays on HIV/AIDS in both Harvey et al and Denman et al that improved attitudes and knowledge scores towards HIV/AIDS [36, 37]. Two separate studies by Perry et al demonstrated changes in audience self-reported intention to smoke and self-reported change in eating habits after viewing plays on the issues [38, 57]. Belknap et al saw a statistical increase in audiences' self-reported intention to use non-violent strategies for conflict resolution after watching a professionally performed, scripted play on dating violence [45].

These professionally created and performed scripts have messages tailored by project leaders to educate or persuade audiences on a given subject. In some cases, detailed ethnographies and interviews with local leaders, health practitioners, and key informants provide background to the script, and interview material may have been directly transposed into script dialogue [44, 45, 62, 65-

[69](#)]. In these examples, impacted community members were able to share their experiences with professionals who reinterpreted those ideas into performances. Some projects involve amateurs, health practitioners, or community members as performers who share the same cultural and socioeconomic background as the target audience. In these projects an emphasis is still placed on carefully researched scripts to deliver program messaging [[44](#), [50](#), [59](#), [60](#)].

### ***1.3.2.2 Theatre-based workshop interventions***

Theatre-based workshops have also shown the ability to impact knowledge, self-confidence, and communication skills in a variety of subjects. Wright and Douglas both used theatre workshops to improve social skills and self-concepts [[58](#), [64](#)]. Nelson's study of a year long theatre-based class showed decreases in self-reported drug and alcohol use [[40](#)]. Baird and Salmon used a single workshop session to explore the issue of domestic violence during pregnancy and found that participants reported an increase of understanding of the issue [[70](#)]. Yuen et al studied a workshop series to improve chronic conditions among older adults and found participants improved on the General Well-Being Schedule and the 36-Item Short-Form Health Survey at the end of the workshop series [[71](#)]. Mattsson-Lidsle found that breast cancer survivors in a drama workshop improved self-reported happiness and satisfaction with life [[63](#)]. In a case control study on school bullying, Joronen saw a statistical decrease in self-reported bullying behavior among adolescents who participated in a drama workshop [[61](#)].



Though theatre workshops are not uncommon, they are less represented in research. This may be attributed to the fact that theatre-based workshops have a wide variety of curriculums with less easily evaluated outcome variables. The studies listed here are all qualitative in nature, except for Joronen's bullying study and Yuen's study with older adults. This is representative of the literature, which favors qualitative assessment of drama workshops.

### ***1.3.2.3 Interactive or improvisation theatre interventions***

Though not as often investigated, interactive theatre interventions have also shown some ability to impact audiences. Interactive or improvisation based theatre interventions are usually based off Augusto Boal's exercises in Theatre for the Oppressed and involve performances that cause the actors and the audiences to interact [32]. Portions of the performance may be scripted, but as the audience interacts with the piece, performers improvise their reactions based off of the contributions from the audience. One type of interactive performance invites an audience member to replace an actor in portraying a particular character. The audience member changes the characters actions and the rest of the cast reacts accordingly [72, 73]. Another type of interactive theatre is often utilized in street theatre, whereby the audience is not aware that a performance is taking place. Actors play a scripted or semi-scripted action in a public place and the public unknowingly participates [72, 73].

Interactive theatre is often explored in healthcare education, especially among nurses, midwives, and occasionally general medicine. The goals of these

programs are usually to increase empathy towards patients and improve caregivers' ability to communicate [74-78]. Though it is not as common as the scripted performance or workshop intervention, interactive theatre is used outside of caregiver education for health interventions. For instance, Judy Orme's study found that interactive performances could influence children's ideas of appropriate behavior [79]. Another example is Lieberman's evaluation of an interactive play on sexual behavior that showed an increase in pro-abstinence attitudes among students [50]. Mitchell showed the ability to influence bystander attitudes toward gender violence through interactive street theatre [80].

#### **1.3.2.4 Professional vs. Amateur Actors**

Theatre intervention will utilize either professional or amateur actors for performances. Of the three models, only the workshop model exclusively uses the target population and thus amateur participants, although either professional artists or educators act as workshop leaders. Both scripted and interactive theatre interventions may use either professional or amateur actors to deliver messaging to the public. Amateurs are usually selected as representatives from the community. Prior research supports the use of amateur performers in health interventions for their ability to impact the community. Middelkoop et al showed a statistical increase in voluntary HIV counseling and testing services among communities that had amateur community members performing scripted plays about VCT [60]. Pelto and Singh demonstrated positive response to amateur performed, scripted plays about alcohol and HIV and audiences self-reported a

decrease in their own intention to engage in risky behavior [65]. Though Kamo et al did not find a statistical improvement in knowledge scores about HIV among audiences, they did see a statistical increase among audiences' perception that young people can be educators when using amateur community members as performers in dramas about HIV/AIDS [59].

### **1.3.3 Comparing theatre models for health interventions**

Despite the examples of interventions that positively influenced the intended subjects, there are examples of each type of drama intervention that research was unable to show any statistical impact following the intervention. Both Elliot and Ponzetti studied scripted plays about HIV and sexual attitudes neither of which reported statistical changes in audience knowledge or behavioral intentions from analysis of pre- and post-performance surveys [42, 81]. Freeman's study of a three month long drama workshop to improve adolescent behavior and social skills did not find statistically significant effects on participants using the Student Self-Concept Scale [54]. In her study, Diana Thrush evaluated interactive performance on intentions to smoke. Thrush reported a weak association among boys who watched the interactive performance and the boys' intention not to smoke, however she found no change among girls' intention to smoke following the performance [39].

As Joronen's systematic review of school-based drama interventions noted, the diversity of theatre as used in interventions makes comparing studies inherently challenging [41]. Daykin et al's systematic review of the impact of

performing arts on adolescent health had similar criticisms, finding that though performing arts had generally positive effects on health initiatives, the methodologies between the studies evaluated were too different to synthesize findings [82]. Without more rigorous research or well-designed comparative studies, one cannot conclude that any of these methods is definitively more effective than others for modifying behavior, changing attitudes, or increasing knowledge. Thus, there is justification for continued exploration of applied and functional theatre as tools for health interventions.

Building on this prior research, this project examines ways to involve amateur community participants in theatre interventions. Using applied theatre in this manner makes it ideal for global health settings such as Tanzania. Not only are community participants less expensive than professionals, but also the participants become integral pieces to the intervention, take ownership of the material, gain experience as educators, and potentially carry on the performance after non-community members have stepped away.

#### **1.4 The Tool: Applied Theatre in Theory**

As noted above, there is evidence that theatre-based interventions can impact a target population's ideas and behavior. Though the different models of intervention are difficult to comparatively evaluate, the general success of these projects may be attributed to the concept that individuals can learn from fictionalized theatrical situations as demonstrated in social cognitive theory.

Social cognitive theory suggests that people can learn through observation of other people. Thus, instead of taking a particular action, an individual can vicariously experience the success and failures of those they observe. Social cognitive theory has been widely applied to health behavior interventions [83]. As Bandura explains, the theory reflects on an individual's ability to change their health behavior with these five determinants: 1) the knowledge of a health risk, 2) the perceived self-efficacy that one can control their own behavior, 3) an understanding of the potential positive and negative outcomes of an action, 4) a personal health goal and strategy for achieving said goal, and 5) an understanding of what will facilitate or hinder one's achievement [84]. Theatre interventions can affect all of these determinants. They provide an audience education about a problem and the opportunity to vicariously experience actions through fictionalized stories. If an audience self-identifies with a character that demonstrates the ability to change his or her personal behavior, then the audience may infer their own self-efficacy. By observing the characters' actions and reactions, audiences observe positive and negative outcomes of behavior. In a theatre workshop, participants are able to explore those outcomes and develop their own strategy of behavior.

While it is encouraging to find support for theatre as a tool for health interventions, an over-reliance on research driven, scripted projects may neglect other significant benefits of theatre-based interventions that are especially important for resource poor settings. Theatre interventions have the potential to spread ideas quickly and to reach large groups at relatively low costs.

Additionally, when using the model of amateur as actor-participants, the process of theatre creation enriches the actors as well as the audience. It can promote self-confidence, teamwork, and community ownership. When community members are involved in every aspect of the intervention and the drama is uniquely developed for the specific community, members have a direct stake in the intervention's success and continuation. Further, using community members as performers decreases the costs involved for the intervention.

The theory of Community Based Participatory Action Research (CBPAR) can also shed light on the benefits of using amateur community members in theatre interventions. CBPAR is a research method that investigates an issue by utilizing the viewpoints of the people who have direct experience with an issue [85]. Applied theatre corresponds to the four phases of CBPAR: 1) planning, 2) acting and observing, 3) reflecting, and 4) producing a revised plan [86]. The planning, acting, and observing stages of CBPAR are explored in applied theatre workshops through exercises that encourage participants to recall behavior and reenact situations. Theatre participants experience the reflecting stage of CBPAR when they respond to each other's improvisations. Producing a revised plan is experienced when theatre participants reimagine behavior and actions.

In CBPAR all stakeholders should have equal representation in a project, especially those stakeholders usually overlooked by traditional research [87]. CBPAR values collaborations between the community directly affected and those initiating the research [85]. By involving community members in the research, the creation, and the performance of a theatre-based intervention, those

stakeholders retain control of the intervention's message. This is especially important in situations in which the community stakeholders have better insight in a particular local problem than outsiders have. This is significant for this study because traditional pedestrian education lessons are generally structured around high-income communities instead of the needs of less developed, low-income settings.

When the target population is involved directly in the creative process, theatre fits the description of CBPAR as a “social initiative that build’s people’s sense of collective efficacy to influence conditions that shape their lives and that of future generations [88].” CBPAR is important in resource poor settings because it encourages capacity building [85]. When community members are guided to become performers, they have the potential to continue educating and advocating through theatre without any outsider intervention.

This study seeks to build upon the amateur model of theatre application by measuring the impact of a performance piece created by participants during *Kutenda Kwa Usalama Barabarani* (KKUB), an applied theatre workshop. Instead of scripting performance pieces with outsiders’ priorities, the applied theatre exercises encouraged community members to self-identify the problem and to discover their own solutions that they could then share with the community through dramatic presentation. Using simple acting exercises that have been developed by the theatre community for decades, non-professional community members practiced the fundamentals of performance, public speaking, and communication. At the same time, drama exercises helped participants to

explore issues and ideas in a safe space. Participants vicariously interpreted and explored events, possible actions, and sought solutions to problems. This model was evaluated by testing the audiences' response to the play created during KKUB.

### **1.5 Applied theatre in RTI prevention**

This study introduced the idea of road traffic injuries because local data demonstrates that it is a significant local problem with little available resources for improvement [2, 11]. Road injury prevention is not a typical topic for applied theatre interventions, which are more likely to focus on “dramatic” or sensational topics, such as HIV/AIDS. Yet, it is an important local health issue that can be significantly impacted through behavioral change. Although road injury prevention is an uncommon subject for drama programs, it is not unusual for road safety programs to incorporate role-play into traditional education, especially when the program is directed to children [20, 89, 90].

This study is unique because it addresses road traffic injuries through drama. By using a relatively noncontroversial health topic, the study can contribute to the growing research on the process of using drama interventions for health topics, while laying a framework through which the community can repeat the intervention with a more challenging or sensitive health concern.



## **2 Objectives**

### **2.1 General Objective**

The objective of this study is to use drama and applied theatre techniques to raise awareness of road traffic injuries and pedestrian safety among children and young adults in Moshi, Tanzania.

### **2.2 Specific Objectives**

- Increase knowledge among primary school students about safe pedestrian behavior.
- Increase young adults' confidence as engaged community advocates and educators.
- Encourage community members to self-identify the scope of road traffic injuries locally and to self-identify solutions.
- Guide community members to collaboratively create their own drama intervention on road safety.
- Present a framework for using an applied theatre workshop to address health and community topics.

## 3 Methods

### 3.1 Study Design and Participants

This mixed methods study evaluated the process of using community driven, applied theatre to affect primary school students' knowledge of healthy practices to prevent road injury. The study population included community volunteers who participated in the development of a dramatic performance about healthy behaviors and local children who viewed the performance.

Participants in the drama group, *Kutenda Kwa Usalama Barabarani*, “Act for Road Safety”, (KKUB), were young adult volunteers between 18 and 25 years old. KKUB met for 6 weeks to explore the issue of road safety in Moshi. KKUB was a collaborative process between the community participants and the group leader, using a combination of American theatre pedagogy, applied theatre, and Theatre for the Oppressed exercises [32, 33, 91]. KKUB participants collaboratively created a final performance product that reflected simple notions of road safety to educate primary school students.

The effectiveness of the KKUB participants' play was evaluated through a pre- and posttest knowledge survey given to the primary school audiences. The knowledge survey was adapted from a pedestrian knowledge assessment survey created by Amend, an organization for road safety that works in Dar es Salaam, Tanzania [26]. The students' test scores were evaluated for statistically significant improvement in scores. Test scores were analyzed using McNemar's test of agreement to determine if the students' posttest scores were statistically

different from the pretest. Schools were compared using the Kruskal–Wallis one-way analysis of variance. The McNemar’s test was used because the test data is binomial; the responses are either correct or incorrect. Statistical tests with parametric assumptions are not appropriate for this survey. McNemar’s test evaluates if the individual responses before and after the performance are statistically different from each other. The null hypothesis is that the responses are not different, so a significant p-value means that the pre- and posttest responses are statistically different. Descriptive statistics were used to assess the primary student population.

KKUB itself was evaluated through analyzing the workshop leader’s journaling following each workshop session and through focus groups and open-ended surveys with KKUB participants. Community leaders attended a final workshop rehearsal and anonymously completed evaluation forms. Open-ended surveys and a focus group were conducted with KKUB participants immediately following the conclusion of the project. A follow-up focus group was conducted four months after project completion with a convenience sample of KKUB participants. All material was reviewed using content framework analysis: material was condensed, categorized, and themes identified.

### **3.2 Ethical Consideration**

An IRB application was submitted to Duke University and approval to conduct the study was granted. The Kilimanjaro Christian Medical College Ethics Board reviewed the study proposal and gave the project a waiver to proceed

because it recognized the project as education research, which is exempt from ethical review in Tanzania. The Moshi Municipality board reviewed the study proposal and granted access to local primary schools. The local board of St. Margaret's Anglican Church also reviewed the proposal and granted permission to use St Margaret's facilities to conduct the project. The Moshi Municipality selected primary schools for inclusion in the project. We spoke to the headmaster of each selected school and acquired additional verbal consent for each school's participation.

### **3.2.1 Informed consent**

KKUB participants were provided with a document outlining informed consent issues including that the information provided by participants would be used for research purposes and that the overall goal of the research was to use drama methods to teach road traffic safety in local schools. Portions of the project were video recorded and participants were given the option of whether they wished to be involved in those recordings. The informed consent for participating primary school students was provided by the school headmaster and local Municipality board, in keeping with the accepted Tanzanian practice that school leaders can provide consent for underage students for school related activities.

### **3.3 KKUB Participants**

The study was conducted in Moshi Urban and Moshi Rural communities of the Kilimanjaro region of Tanzania. Young adult community participants were

recruited for KKUB through word of mouth and strategically posted flyers at locations within easy traveling distance to the workshop location. Participants needed to be of Tanzanian age of consent (18) and had to be within transportation range of the workshop facility. Selection criteria for participation was not limited by literacy or language skills. KKUB participants were supplied with a daily transportation allowance of 2,000 TZS (\$1.23) and received a financial incentive of 25,000 TZS (\$15.33) at the halfway point and 25,000 TZS (\$15.33) upon completion of the project.

KKUB drew a total of 18 women and 20 men between 15 and 33 years old. Despite being informed that involvement was limited to those over 18 years old, three boys aged 15 years old arrived at more than one session and tried to negotiate their participation. They were not allowed to participate due to the ethical board restrictions. Halfway through KKUB participants were evaluated for continuation. KKUB participants with fewer than two unexcused absences were allowed to continue with the drama performance portion of the project. Of the original participants, 13 men and 12 women, between 18 and 26 years old completed all KKUB meetings.

### **3.4 School Participants**

KKUB culminated in a performance piece designed by participants. This performance was presented to four local public primary schools: Mandela, Kaloleni, Mwenge, and Muungano. Participating primary schools were selected through convenience sampling, with approval from the District Education Officer,

to represent urban and rural locations (2 schools each). The intention was to present the intervention to 100 children at each school location. However, enthusiasm for the performances swelled the student audiences from between 200 and 400 children at each school. We did not prevent students who wished to watch the performances from doing so. At each school we administered pedestrian knowledge tests to a convenience sample of 110 students immediately before and after the performance.

## **4 Kutenda Kwa Usalama Barabarani, The Drama Workshop**

### **4.1 Explore the problem, experiment with solutions**

Critical to this study was the involvement of community stakeholders. Instead of presenting the community with a script of selected messaging, the goal of KKUB was to give community members the tools to find and develop their own ideas. Initially, recruiting of local young adults began through word-of-mouth and posted advertisements. Flyers seeking young adult volunteers with the time and inclination to participate in a performance-based advocacy project were posted at bus stations, coffee shops, and the hospital and college bulletin boards. Over 40 individuals attended the first open meeting, which was spent reviewing the program goals and expectations for the month-long workshop and performances. We discussed participation criteria and reviewed participant consent forms.

Criteria for participation were quite broad in order to remain inclusive of young men and women of diverse socioeconomic backgrounds. Fluency in spoken English or literacy in either Kiswahili or English were not factors in participant selection. KKUB participants had to be at least 18 years old, Tanzania's age of consent. Due to the collaborative nature of the project, a strict attendance requirement was adopted whereby participants needed to attend the majority of KKUB sessions.

The principal investigator and KKUB leader holds a Master of Fine Arts in Acting and has taught theatre fundamentals at the college level. She was

qualified to lead KKUB sessions based off of her professional acting experience and prior practice as a drama instructor. All materials were presented in English and a local Tanzanian college student provided translation into Kiswahili as needed to the participants. Participants were encouraged to respond in either Kiswahili or English, whichever language they were most comfortable in expressing their opinions to the group. Additionally, KKUB's syllabus relied heavily on abstract physical and vocal communication, thereby bypassing language differences between the leader and participants.

The curriculum borrowed elements from a combination of Augusto Boal's *Games for Actors and Non-Actors* [33], Viola Spolin's *Improvisation for the Theatre* activities [91], and applied theatre exercises to encourage exploration of the problem (road traffic injuries) and to allow actor-participants to experiment with problem solving in a safe space. Additionally, each KKUB session ended with a period of group reflection and discussion. These daily talkback sessions gave participants the opportunity to provide immediate feedback on the exercises. Feedback was useful in evolving the syllabus throughout KKUB and reinforced the collaborative nature of the project as a whole.

The length of an applied theatre workshop depends on the primary goals of the workshop participants and leader. For example, role-playing, an applied theatre exercise, could be used alone to complement a more traditional education program in a single session. On the other end of the spectrum, a research-driven theatre intervention could spend months or years investigating a problem and collecting first-person accounts before professionals develop the



final performance piece. The theatre workshop framework used in KKUB fell between these two extremes. It was intended for a thorough investigation of a single topic, road traffic injuries and pedestrian safety. The month-long process gave participants the opportunity to self-identify problems and solutions with minimal influence from outsiders. While we used it here to investigate road traffic injuries and pedestrian safety, the framework could be reapplied to any given development or health issue that a community or group feels compelled to explore.

KKUB culminated in a collaboratively created performance piece that demonstrated the ideas and solutions the participants discovered during the workshop. The participants performed the piece to select community leaders for feedback. Taking the feedback into consideration, participants finalized the performance piece. They presented the final piece to four local primary school audiences on four separate occasions. The participants' ability to create an informative performance was evaluated by measuring the audience of primary students' immediate increase in pedestrian knowledge through pre- and post-performance knowledge assessment surveys.

## **4.2 Curriculum in Depth**

Our applied theatre curriculum is a mixture of exercises from Boal's *Games for Actors and Non-Actors* [33], Viola Spolin's *Improvisation for the Theater* [91], and traditional American theatre practice. The curriculum presented here modifies these exercises to make them easier for non-

professional community members to focus on health topics. To accommodate working in an international setting with participants who speak different languages, a heavy emphasis was placed on exercises without verbal communication. Instead, exercises that utilize abstract sound and body movement guided most of the lessons. The curriculum was broken down into the five following stages:

**Stage One:** Preliminary/Familiarization. Participants are selected to join the performance group. They familiarize themselves with the workshop meeting space. Participants meet one another and the program leaders. Participants engage in relaxation, improvisation, and movement exercises.

**Stage Two:** Data Collection/Analysis. Participants use group discussion and guided observation activities around the community to explore the issue (in this case, behavior that leads to road injury). They seek deeper understanding of the issue, including the causes, effects, and possible solutions through discussion and improvisation activities.

**Stage Three:** Theatre Creation. Participants translate the issue and suggested solutions into theatre performance through guided activities.

**Stage Four:** Theatre Performance. Participants communicate the issue to other community members (here, to students) through performance.

**Stage Five:** Post-performance reflection. Held immediately after the performance to discuss issues highlighted. Observers are given activities through which they can participate. Observers are encouraged to discuss the issues and propose strategies.

#### **4.2.1 Stage One: Introduction/ Familiarization**

We begin with familiarization activities in stage one whereby participants meet one another and program leaders. They engage in relaxation, improvisation, and movement exercises. Participants discuss the overarching goal of the workshop. In some cases the specific topic of interest to the workshop may not be pre-selected. In that case, stage one activities will encourage and facilitate participants in discovering an issue most important to them as community members. The main topic of interest may also be preselected, as was the case for KKUB. Instead of using drama exercises to identify the topic, we began with a discussion session about RTIs and pedestrian safety. Participants were encouraged to discuss with the group their experiences with RTIs. They were asked if any of them had been involved in or knew anyone who had been involved in road injury accidents.

During the first session individuals were not hesitant to raise their hand to identify themselves as having been affected by RTIs, but only a few of them were willing to share details with the group. This hesitancy was expected in the first sessions. The drama exercises in the following stages of the workshop help to illuminate the experiences of those who are less comfortable or less able to clearly articulate on their own.

Every workshop session begins with a physical and vocal warm-up. This has multiple purposes: to encourage participants to become engaged and excited for the day's material to follow; to help participants let go of the concerns and stresses of their day to day life; and to encourage a feeling of unity and

teamwork needed for the collaborative nature of the project. On a practical level, this period of time also allowed latecomers to arrive before the session's core activities started. Ideally, participants should not skip the warm-up section. Participants who arrived too late to engage in the warm-up exercises were generally less involved in the rest the day's activities.

Tanzania is an example of a culture with a relaxed relationship to scheduling and it was difficult to arrange for all participants to arrive at the same agreed time. Communicating with local facilitators of other projects, it was suggested that a meeting time should be arranged nearly an hour ahead of the expected start time. Other facilitators recommended a "closed-door" policy, whereby latecomers were excluded from the day's session. Neither of these options was conducive to the collaborative and "safe space" environment needed for an ensemble drama project. The workshop leader began all session at the appointed time with warm-up activities, while core activities were withheld until nearly all participants had arrived.

#### **4.2.2 Stage Two: Data Collection/Analysis**

After ensemble building, relaxation, and improvisation activities, the workshop continues with discussion of the problem, road injury and pedestrian safety. Discussion is aided by participants' observations both in and out of workshop sessions. Participants seek deeper understanding of the problem, including its causes, effects, and possible solutions through image work (exercises utilizing miming and static imagery made with the body) and

improvisation. Stage two builds upon the group dynamic established during stage one and also incorporates more complicated theatre activities to explore the issue. After this, participants should be feeling more comfortable opening up to each other during sessions.

#### ***4.2.2.1 Road Traffic And Pedestrian Safety Lessons***

During stage two of the workshop process, the participants identify the important road traffic and pedestrian safety lessons that they want to teach the audiences. This is a collaborative process where participants use their observations and experiences to identify key concepts, while the leader brings suggestions on the issue from the literature. In KKUB, the leader used prior research to propose safety lessons, including the following [\[92\]](#):

- Do not play in the road
- Walk facing traffic
- Cross the road at zebra stripes (crosswalks) or when there is clear visibility
- Walk, don't run across the street
- Cross the road in a straight line

KKUB participants added other lessons they wished to teach, including:

- Big groups of pedestrians should not walk in the road
- Don't rely on vehicles to honk or stop for you
- Accidents have many consequences, not just to those involved
- Follow street signs

- Listen to adults

#### **4.2.3 Stage Three: Theatre creation**

In stage three the workshop participants bring together the experiences and improvisational work they have done in the first two stages to create a script/story for performance. Participants reflect together and outside of the workshop on the most important themes. Stage three exercises lead directly to plot creation. The group pulls from the actions to develop the script for the final performance.

Advanced improvisation exercises help participants explore action and choices. Once participants become comfortable, the leader should introduce themes and situations that reflect the central topic, preferably using ideas that the participants have suggested in prior exercises and discussion. These exercises encourage participants to vicariously experience problems and experiment with reactions to those problems.

For example, one theme that came up during early stages of KKUB concerned wearing motorcycle helmets. Though Tanzanian law requires all motorcycle drivers to wear helmets, this law is not enforced. Few drivers and almost no motorcycle passengers wear helmets. We explored this problem in our exercises. In one game of 'Freeze' (see Appendix B for description of drama exercises), actors were given the prompt: actor one is a *piki-piki* (motorcycle taxi) driver and actor two is a customer-passenger who asks the driver for a helmet. This allowed the group to play out the conversation and consequences for both

characters. It also revealed another concern of the group when one participant froze the scene and entered the scene as a policeman. As the policeman, the actor laughed at the actor-passenger's dilemma and belittled her for her concerns. This reflected the group's dissatisfaction with authorities. In another example we used helmet wearing as a prompt in the game 'Rewind'. In this instance the two actors began as friends who owned a motorcycle together and must decide whether to use their shared resources to purchase a helmet. Again, the exercise allowed participants to explore the choices of these characters. This time the participants were able to change the choices until they were satisfied with the outcome.

#### **4.2.4 Stage Four: Theatre Performance**

Stage four is focused on performance. The workshop participants rehearse their collaboratively created script or performance piece. If time allows it, this is the appropriate time to present the performance to key community stakeholders and experts on the central topic. These leaders should be encouraged to honestly respond to the piece and provide constructive criticism. The piece should be reviewed for accuracy of information, especially if the topic is more sensitive or complicated. Participants can use this guidance to restructure the final piece as needed. Time should be allowed during these sessions to continue physical and vocal warm-ups and introductory level games. This encourages the group to continue growing together as a team and strengthening their performance skills.

During stage four of KKUB we invited community leaders including teachers, social workers, and healthcare facilitators to a rehearsal of the performance. The participants rehearsed as though they were presenting to the primary student audience. The invited guests filled out comment cards on the material and gave vocal feedback. This critical step is important to give amateurs or less experienced performers the feeling of presenting to “outsiders.” It also helps validate their work. A few of the participants had prior experience as performers, but were not used to performing specifically for children. The comments from respected leaders encouraged these participants that their performance was meaningful even though it did not have darker subject matter.

#### **4.2.5 Stage Five: Post Performance Reflection**

The post performance reflection period solidifies the play’s target messages. The workshop participants should facilitate this stage as peer-educators. The structure of the reflection can be tailored to the workshop participants’ strengths. The most direct tool for reflection is to have a question and answer period during which audiences can ask the actors questions and vice versa. Large audiences might be broken into smaller groups for this Q&A. Another tactic is to request that the audience speak to the “characters” of the play; encouraging them to engage the characters in a discussion of why they made the choices they did during the play’s action. The actors respond back as the characters, explaining their motivation. If the situation allows it, another tactic is to recreate some of the simple workshop activities with the audience. For



instance, we might invite an audience member to take the place of an actor in a scene and let that audience member play out their reaction to the situation.

KKUB participants had varying levels of confidence in their abilities to lead audience reflection. As a group we discussed the best ways to engage student audiences and to reinforce the education. In discussion, the participants identified one main concern about working with children: that they would not remain attentive during the performance and thus miss the messages. The majority of participants felt that the performance needed to be as entertaining and humorous as possible to keep children engaged. This was difficult for a few of the other participants who had previous experience performing dark subject matter, intended to evoke sympathy and serious reflection. We spent several workshop sessions discussing this issue. As KKUB participants would be responsible for this portion of the intervention without immediate help from anyone else, the participants were encouraged to find a solution together with only minor guidance from the leader.

After much discussion, the participants decided to incorporate the acting game 'Rewind' into the performance piece, whereby each scene would involve a moment during which the actors would go backwards, reversing the action. They then could go forward and the characters would play out different choices. This decision reshaped the format of the scripted performance. In essence, they moved the "reflection" stage of the curriculum into the "performance" stage. Together, we chose one KKUB participant to be the narrator and main educator who would reinforce the messaging at the end of each scene and would initiate

the “Rewind.” The added benefit was that the performers were able to juxtapose serious situations—for instance an unsafe motorcycle that frightens a pair of children—with the light-hearted, silliness of goofy sounds and broad gestures as the actors move backwards through the action. This light-hearted approach was important to keep child audiences engaged. At the end of each performance, the actors introduced themselves to the student audience and had the opportunity to briefly “testify” about the subject, further reinforcing the safety messages. Finally, the performers sang and danced off the playing space. Together, these two steps allowed both serious and fun responses in the reflection period.

## **5 Results: School Performance Intervention**

KKUB participants presented their play on road and pedestrian safety to four local primary schools: Kaloleni, Muungano, Mandela, and Mwenge. A transcription of the play can be found in Appendix C. The schools were convenience sampled to represent both urban (Mwenge and Muungano) and rural (Kaloleni and Mandela) populations of Moshi Municipality. All four locations presented very different environments for the performance.

### **5.1.1 Kaloleni Primary School: October 8<sup>th</sup> 2013**

Kaloleni Primary is a school far outside the center of town. It has four large, two-room buildings and a separate building for the headmistress and teacher offices. The school has a center courtyard with some trees and a washing facility. Behind the school is a very large dirt field for athletic activities. The buildings have painted world maps on the outer walls and some lesson posters are taped inside. Construction material around the buildings suggested that repairs were planned for the facilities, though they had not yet taken place. The headmistress gave us permission to bring our performance and invited us to come midday.

The headmistress gave us space behind the school buildings, heading towards the athletic field. There was a small amount of shade from the buildings for the student-audience to sit in while the performers worked in direct sunlight. We had negotiated to show the play to around 100 students. A teacher led out a group of students and then returned to the office. Children sat on the ground to

complete pre-tests. After we began the performance, many more children were released from their classes and came to watch. Though the teachers were not involved, a few of them watched from windows in the school building. The children in the audience were generally attentive during the play, despite additional children wandering around. Midway through the play, one of the teachers decided to drive his personal motorcycle into the space (Figure 5). Several KKUB participants stopped him from driving through the children or the play. It was communicated to me that the teacher thought he was being helpful by bringing his motorcycle into the performance. Children sat on the ground to take the posttest. Children who were not taking the test milled around and played games.



Figure 3: Aerial view of Kaloleni



Figure 4: Kaloleni students guess the meaning of street signs





Figure 5: Teacher disrupts performance at Kaloleni



Figure 6: Performance at Kaloleni Primary

### **5.1.2 Muungano Primary School: October 9<sup>th</sup> 2013**

Muungano Primary is a public school located close to the urban center of town. Lessons are held in several classrooms in a large two-story brick building. The facilities are well kept, including a lush yard and private above ground water tank. Muungano Secondary shares the school campus, though they have separate buildings. Unlike Kaloleni, Muungano has visible support from international donors. St. Joseph's Catholic Primary School, a British private school, has supported Muungano through small development projects and short workshops [93]. Other international support has come from the UK based “The Mount Kilimanjaro First Aid Community Programme” and “Village Education Project Kilimanjaro,” among others [94, 95].

The Muungano headmaster was very enthusiastic about our project and invited us to come during school hours. He offered us the use of an outdoor stage—a cement platform with a roof in the yard. While we prepared for the performance, teachers led out their classes in an orderly fashion. The teachers facilitated breaking the students into groups of 10 for the pretest. The teachers remained throughout the intervention and interacted directly with children to keep them focused. Children sat on the ground to take the pre-test. They sat or stood, grouped around the platform, to watch the performance. Other children who were not occupied with class joined the audience during the performance. Though there was some activity outside from the secondary school students, they were several yards away and were not disruptive to the performance.





Figure 7: Arial view of Muungano Primary School



Figure 8: Main building at Muungano Primary





**Figure 9: Performance at Muungano used a raised platform**

### **5.1.3 Mandela Primary School: October 10<sup>th</sup> 2013**

Mandela Primary is a public school outside the center of town. The school shares a large campus with another public school, Azimio Primary. The facility consists of four large two-room buildings connected by an outdoor path. The headmaster has a small office in a separate structure. Four other one-room buildings belong to Azimio. The eight buildings face towards each other in a square formation with a shared tree covered lawn in the middle. Both schools share the washroom and a snack facility. They also make use of a very large dirt field for athletic activities. The Lions Club of Kilimanjaro, an organization of local business leaders, provides Mandela some financial and leadership support.

The headmaster was receptive and invited us to come midday. The headmaster gave us the tree filled courtyard in between the two schools for our performance. Initially, we arranged with the headmaster to show the play to only two classes, about 100 students. However, once the students had been selected for study participation, the headmaster allowed other classes to join the audience. Several teachers helped organize the students to take their pre-performance test. The teachers kept the additional students quiet while the study students took their tests. Children sat on the ground in small groups or on the paved walkway to take their tests. We started the performance with over 200 children sitting or standing around the playing space. After we began the performance, Azimio, the second primary school released many of its students. These students joined our audience for a combined group of over 400 children (Figure 12). Several teachers watched the performance and reprimanded overly disruptive children in the large group.



Figure 10: Arial view of Mandela and Azimio Primary Schools



Figure 11: Mandela Primary School grounds





Figure 12: Huge audience at Mandela Primary School

#### 5.1.4 Mwenge Primary School: October 11<sup>th</sup> 2013

Mwenge Primary is an urban public school with well-kept facilities. The walls are painted with educational material, including maps, figures, and lessons. Children sit at desks inside and there is a small outside yard for play. At Mwenge, the headmistress gave us the use of the main school hall, though she did not permit the performance to take place during school hours. The hall was a large indoor space with a tin roof, a cement floor, and large, chain-linked fence windows, which were open to the outside elements. The headmistress had left school early on the day of our performance and only one teacher remained during our intervention.

Children were not required to attend the performance, however many children chose to stay after school and attend. The remaining teacher helped us

by selecting children for the pre- and posttest. After the 110 student sample had been counted out, many other children remained who wanted to participate. The teacher locked the extra children outside while the selected children took their pretests at group bench desks in the hall. For the performance the desks were moved and children sat on the cement floor. Additional children were allowed into the room to watch the performance, doubling the audience size. During the performance there was a brief, heavy wind and rainstorm. Though protected by the roof, the elements were still disruptive due to the tin ceiling and open walls. At the end of the performance, the extra children were excused and the study participant children took their posttests at the desk benches.



Figure 13: Aerial view of Mwenge Primary School





Figure 14: Mwenge students take pre-test with non-tested students watching



Figure 15: Performers create a motorcycle at Mwenge



Figure 16: Performance at Mwenge Primary

## 5.2 Performance Data Collection and Analysis

### 5.2.1 Performance Evaluation

Each school performance was evaluated by administering pre- and post-knowledge assessment surveys to children in the audience. The knowledge assessment survey was adapted from a knowledge assessment test used for pedestrian safety in Dar es Salaam. Selected students were segregated into groups of 10 children. One KKUB participant administered the survey to a single group. Each child was provided with a paper survey and a pencil. The KKUB participant read a script introducing the survey to the children; guided them through filling out the school, sex, and age information; and read each question of the survey. When all children in the group completed the survey, the KKUB

participant collected the surveys and gave them to the leader. Following the performance the same group of children returned to the same KKUB participant and repeated the process.

Four hundred and thirty nine primary students from four schools completed the eleven-question true/false pedestrian knowledge survey immediately before and following the intervention performance (Table 1). A convenience sample of student attendees from Primary level Standard 1-4 (equivalent to American grades 1-4) was selected to complete the surveys. No students declined to participate in the knowledge survey.

**Table 1: School Population**

<b>Sample Size</b>		
<b>School</b>	<b># Students</b>	<b>Percent</b>
<b>Kaloleni</b>	111	25.28
<b>Muongano</b>	110	25.06
<b>Mandela</b>	109	24.83
<b>Mwenge</b>	109	24.83
<b>Total</b>	439	100

### **5.2.2 Performance Evaluation Analysis**

Students ranged between 6 and 15 years old, evenly distributed between male and females (Table 2). Student surveys were evaluated using McNemar's test of agreement and the Kruskal–Wallis one-way analysis of variance.



Table 2: Distribution of students by age and gender

All schools		
Age	% of total (n)	Female % (n)
6	0.46 (2)	0
7	1.37 (6)	16.67 (1)
8	7.06 (31)	67.74 (21)
9	20.05 (88)	60.23 (53)
10	26.2 (115)	47.83 (55)
11	18.22 (80)	48.75 (39)
12	18 (79)	53.16 (42)
13	7.52 (33)	33.33 (11)
14	0.91 (4)	0
15	0.23 (1)	100 (1)
Total	100 (439)	50.8 (223)

The total student population pretest score averaged 71.4% and following the performance the total average score improved to 84.4% (Table 3). Using McNemar's test of agreement, this change was statistically significant with  $P > |z| = < 0.00001$ . Segregated by school, Kaloleni's average pretest score was 61.51% and improved to an average posttest of 76.99%; Muungano's average pretest score was 74.05% and improved to 86.53%; Mandela's average pretest was 74.23% and improved to 85.07%; Mwenge's average pretest was 75.98% and improved to 89.07%. These pre- and posttest scores show a statistically significant improvement in correct answers for all four schools, using McNemar's test ( $P > |z| = < 0.0001$ ) (Table 3). The Kruskal–Wallis one-way analysis of variance showed that results from Kaloleni were statistically different from results at the other schools (Table 4). Test scores from Mwenge, Muungano, and Mandela were not statistically different from one another. There was also no difference between genders; average improvement among boys was 12.79

percentage points and among girls was 13.17 percentage points. The youngest children scored slightly lower than the oldest children however post-scores improved about the same amount for all children and there was no statistical difference between them.

**Table 3: Pre- and posttest results by school**

<i>School</i>	<b>Total score % correct</b>		<b>McNemar's test of Agreement</b>
	<i>Pre-Test</i>	<i>Post-Test</i>	<b>Prob &gt;  z </b>
<b>Kaloleni</b>	61.51	76.99	<0.0001
<b>Muongano</b>	74.05	86.53	<0.0001
<b>Mandela</b>	74.23	85.07	<0.0001
<b>Mwenge</b>	75.98	89.07	<0.0001
<b>Total</b>	71.40	84.39	<0.0001

**Table 4: Linear model predicting average post-score by school**

<b>School</b>	<b>coef</b>	<b>Std. Err.</b>	<b>t</b>	<b>P&gt;t</b>
<b>Kaloleni</b>	-1.050	0.17	-6.07	<0.0001
<b>Mandela</b>	-0.160	0.17	-0.92	0.357
<b>Mwenge</b>	0.280	0.17	1.61	0.108
<b>Muongano (ref)</b>	9.518	0.12	77.61	<0.0001

Though the overall survey scores did show significant improvement, scores did not improve on all of the individual items at every school (Table 5). At Kaloleni and Mwenge responses to questions one ('It is safe to play in the road') and six ('We should not hold hands when crossing the road') did not improve significantly (Table 6, Table 9). Children at Muongano did not significantly improve their scores for questions one, two ('When walking in a group, we should

stay to the side of the road'), and ten ('If there is no zebra crossing we should walk in a place where there is clear vision') (Table 7). Children at Mandela did not significantly change answers for questions 1-3 or 9-11 (Table 8). (Question 3: 'We are supposed to cross the road in a straight line because the distance becomes shorter than when crossing diagonally.' Question 9: 'We are supposed to find a place where there is a straight line so that the drivers can see us and we can see the oncoming vehicles.' Question 11: 'When we are walking in a group, it is ok to walk in the road because cars will see us and stop.') All other questions significantly changed at all schools (Table 5).

**Table 5: Significance of test score change by question, all schools combined**

<b>Question</b>	<b>Pretest % correct</b>	<b>SD</b>	<b>Posttest % correct</b>	<b>SD</b>	<b>McNemar's test of Agreement p value</b>
<b>1</b>	96.58	0.18	98.86	0.11	0.0063
<b>2</b>	92.03	0.27	97.27	0.16	0.0003
<b>3</b>	59.00	0.49	73.80	0.44	<0.00001
<b>4</b>	52.16	0.50	78.82	0.41	<0.00001
<b>5</b>	87.24	0.84	97.49	0.96	<0.00001
<b>6</b>	38.50	0.49	49.89	0.50	<0.00001
<b>7</b>	73.58	0.44	91.34	0.28	<0.00001
<b>8</b>	58.77	0.49	76.99	0.42	<0.00001
<b>9</b>	87.70	0.33	96.58	0.18	<0.00001
<b>10</b>	82.69	0.38	90.21	0.30	0.0001
<b>11</b>	57.18	0.50	76.99	0.42	<0.00001
<b>Total score (mean)</b>	71.40	1.54	84.39	1.38	<0.00001

Table 6: Kaloleni significance of score change by question

Question	Pretest % correct	SD	Posttest % correct	SD	McNemar's test of Agreement p value
1	<b>91.89</b>	<b>0.27</b>	<b>96.40</b>	<b>0.19</b>	<b>0.125</b>
2	89.19	0.31	98.20	0.13	0.0063
3	69.37	0.46	82.88	0.38	0.0041
4	21.62	0.41	56.76	0.50	<0.00001
5	85.59	0.35	97.30	0.16	0.0023
6	<b>35.14</b>	<b>0.05</b>	<b>43.24</b>	<b>0.05</b>	<b>0.1877</b>
7	58.56	0.49	76.58	0.43	0.0005
8	25.23	0.44	50.45	0.50	<0.00001
9	86.49	0.34	94.59	0.23	0.0225
10	87.39	0.33	95.50	0.21	0.0352
11	26.13	0.44	54.95	0.50	<0.00001
Total score (mean)	61.51	1.69	76.99	1.59	<0.00001

Table 7: Muungano significance of score change by question

Question	Pretest % correct	SD	Posttest % correct	SD	McNemar's test of Agreement p value
1	<b>98.18</b>	<b>0.13</b>	<b>100.00</b>	<b>0.00</b>	<b>0.5000</b>
2	<b>93.64</b>	<b>0.25</b>	<b>98.18</b>	<b>0.13</b>	<b>0.1250</b>
3	48.18	0.50	67.27	0.47	0.0001
4	79.09	0.41	94.55	0.23	0.0001
5	<b>89.09</b>	<b>0.31</b>	<b>96.36</b>	<b>0.19</b>	<b>0.0768</b>
6	32.73	0.47	44.55	0.50	0.0351
7	75.45	0.43	97.27	0.16	<0.00001
8	70.91	0.46	88.18	0.32	0.0009
9	84.55	0.36	98.18	0.13	0.0007
10	<b>76.36</b>	<b>0.43</b>	<b>82.73</b>	<b>0.38</b>	<b>0.2100</b>
11	66.36	0.05	84.55	0.03	<0.00001
Total score (mean)	74.05	1.20	86.53	1.11	<0.00001

**Table 8: Mandela significance of score change by question**

<b>Question</b>	<b>Pretest % correct</b>	<b>SD</b>	<b>Posttest % correct</b>	<b>SD</b>	<b>McNemar's test of Agreement p value</b>
<b>1</b>	<b>98.17</b>	<b>0.13</b>	<b>100.00</b>	<b>0.00</b>	<b>0.5000</b>
<b>2</b>	<b>96.33</b>	<b>0.19</b>	<b>95.41</b>	<b>0.21</b>	<b>1.0000</b>
<b>3</b>	<b>58.72</b>	<b>0.49</b>	<b>66.06</b>	<b>0.48</b>	<b>0.1686</b>
<b>4</b>	38.53	0.49	76.15	0.43	<0.00001
<b>5</b>	88.99	0.31	98.17	0.13	0.0063
<b>6</b>	44.95	0.50	61.47	0.49	0.0064
<b>7</b>	85.32	0.36	94.50	0.23	0.0129
<b>8</b>	61.47	0.49	80.73	0.40	0.0005
<b>9</b>	<b>91.74</b>	<b>0.28</b>	<b>97.25</b>	<b>0.16</b>	<b>0.1460</b>
<b>10</b>	<b>81.65</b>	<b>0.39</b>	<b>88.07</b>	<b>0.33</b>	<b>0.1435</b>
<b>11</b>	<b>70.64</b>	<b>0.46</b>	<b>77.98</b>	<b>0.42</b>	<b>0.1153</b>
<b>Total score (mean)</b>	74.23	1.28	85.07	1.16	<0.00001

**Table 9: Mwenge significance of score change by question**

<b>Question</b>	<b>Pretest % correct</b>	<b>SD</b>	<b>Posttest % correct</b>	<b>SD</b>	<b>McNemar's test of Agreement P value</b>
<b>1</b>	<b>98.17</b>	<b>0.13</b>	<b>99.08</b>	<b>0.10</b>	<b>1.0000</b>
<b>2</b>	88.99	0.31	97.25	0.16	0.0117
<b>3</b>	59.63	0.49	78.90	0.41	0.0015
<b>4</b>	69.72	0.61	88.07	0.82	0.0002
<b>5</b>	85.32	0.36	98.17	0.13	0.0005
<b>6</b>	<b>41.28</b>	<b>0.49</b>	<b>50.46</b>	<b>0.50</b>	<b>0.1539</b>
<b>7</b>	75.23	0.43	97.25	0.16	<0.00001
<b>8</b>	77.98	0.42	88.99	0.31	0.0227
<b>9</b>	88.07	0.33	96.33	0.19	0.0225
<b>10</b>	85.32	0.36	94.50	0.23	0.0063
<b>11</b>	66.06	0.48	90.83	0.29	<0.00001
<b>Total score (mean)</b>	75.98	1.38	89.07	1.22	<0.00001

## **5.3 Discussion of Primary Student Test Results**

### **5.3.1 General test scores**

The improvement in test scores shows that the collaboratively created performance had a statistically significant impact on primary school students' knowledge of road and pedestrian safety. Children from each school had slightly different levels of awareness regarding pedestrian safety before the intervention. Due to the nature of the test, the schools with the lowest pretest scores have the most opportunity to show the greatest improvement and schools with the highest pretest scores have the least opportunity to improve. With the lowest incoming knowledge test scores, Kaloleni did improve the most, by over 15 percentage points in their posttest scores (Table 3). Interestingly, though Mwenge had the highest average pretest score, it had the second best improvement in posttest scores by just over 13 percentage points, however this was not statistically different from Muungano and Mandela (Table 4).

### **5.3.2 Road Safety Concepts**

The survey tested improvement in simple road injury concepts using a true or false format. The first question, "*Barabara ni sehemu salama kwa michezo*,"—"It is safe to play in the roads"—did not change significantly among any school group. In the pretest, 96.58% of all children correctly identified that this statement is false. This improved to 98.9% following the performance. This slight change demonstrates that nearly all children we interviewed had prior familiarity with this general concept of road safety. Question two reflected the statement that

children should walk on the side of the road. Prior to the intervention, 93.64% of children at Muungano and 96.33% of those at Mandela correctly identified this point and did not significantly change.

The other questions that did not show statistical improvement cannot be attributed to prior knowledge, as the pretest scores were low. Question 10 (regarding zebra crossings) did not change significantly at Muungano. Questions 9 (regarding crossing in a straight line), 10, and 11 (regarding walking in groups) did not change significantly at Mandela. The difference between schools suggests that the information delivered was not consistently received between the different performances. When posttest scores for an individual question improved significantly, it suggests that the road safety concept was understood and retained by the audience. When posttest scores did not improve significantly, it suggests that the road safety concept was not understood (Table 10).

It should be noted that the questions that did not significantly improve at certain schools (questions 9, 10, and 11) presented slightly more complicated reasoning than the other questions. For instance, question 3, which showed improvement, required students to correctly identify that they should cross the road in a straight line. Question 8, which also showed improvement, required students to correctly identify that they should cross the road when there is clear visibility. However, some students struggled with question 9, which required students to think both about crossing in a straight line and crossing with visibility. Question 10, which also proved difficult, required students to think about crossing in a straight line and about zebra stripes (crosswalk). Students generally

improved on question 2, which required them to identify that they should walk on the side of the road. However, some children had trouble with question 11, which also required them to identify that they should walk on the side of the road, but added the element of walking in a group. It may be that the students were unable to understand the question or the safety concept when presented indirectly. However, when all school answers are assessed together, the posttests show a significant difference for all questions individually (Table 5).

**Table 10: Pedestrian lessons learned**

<b>Pedestrian Safety Lessons</b>	
<b><i>Concepts Known (no statistical change-high pretest scores)</i></b>	<b>School</b>
Don't play in the street	All Schools
Walk on the side of the road	Muongano, Mandela
<b><i>Concepts Not Learned (no statistical change)</i></b>	<b>School</b>
Cross the street in a straight line if there is no zebra crossing	Muongano, Mandela
Cross the street in a straight line when you can see both ways	Mandela
When walking in a group, walk on the side of the road	Mandela
<b><i>Concepts Learned By All Schools (statistical change)</i></b>	
Cross the street in a straight line	
Walk, don't run, across the street	
Walk facing traffic	
Hold hands when crossing the street	
Playing in the street is not safe, even though cars might honk at you	
Cross the road at a spot where you can see both ways	



### 5.3.3 Differences Between Schools

Though we cannot say that there is a statistical difference between all the schools, the differences we do see have implications for further research. A key concern for drama-based interventions is consistency between performances. Generally, it may be assumed that a text-based document, such as a pamphlet or book, will provide equal opportunity for education to any reader with equal literacy. However, primary students in Tanzania have vastly different literacy levels, and there is suggestion that nearly half of them cannot read either English or Kiswahili after completing Standard Four [25]. Additionally, tremendously overburdened teachers and overly large class sizes could prevent children from receiving equal guidance through printed material. So, although printed material might be best in other settings, it does not guarantee consistent learning opportunity in Tanzania. Though potentially less effective than the best book in a high performing school, a performance intervention can reach large groups, regardless of literacy. The student audience size is only limited by the environment and children's ability to see and hear clearly.

That being said, the opportunity to educate through drama is dependent on the actors' performance. Three of four of our performances took place outside, requiring different levels of vocal projection. For example, our performance at Mandela may have been adversely affected by our actors' inability to vocally project loud enough to reach the entire audience. At Mandela, an outside venue, our audience grew unexpectedly from 150 children to over 400 children (Figure 12). Our actors were not prepared for an audience this large and

the education may have been negatively impacted. The experience at Mandela demonstrates one potential problem for performance interventions set at informal, public, or outdoor locations. The unpredictability of the environment should be considered in future research.

Consistency between performances is one area that our amateur, community actor-participants may fall short compared to trained actors. While an unpredictable environment can affect even professional actors, the amateur actor has less developed skills at her disposal and is thus less adaptable. The amateur actor is also more susceptible to personal stresses, varying confidence, and distractions that may impact their performance and their ability to educate. This is one trade-off that should be considered when determining whether an amateur or professional theatre drama is more appropriate for a project.

## **6 KKUB Workshop Results**

### **6.1 KKUB Data Collection and Analysis**

KKUB was evaluated through the workshop leader's personal journaling following each session, documenting the day's activities. KKUB participants engaged in semi-structured group discussions at the end of each session throughout the project. Ten community leaders attended the final session with a performance rehearsal and anonymously completed evaluation forms. At the project's end, participants completed open-ended surveys or participated in a focus group. One focus group and seventeen open ended surveys were administered at the conclusion of the project. Four months after project completion, a follow-up focus group was conducted with six KKUB participants. All materials were coded and categorized for related themes and relationships using a content framework analysis.

### **6.2 KKUB Participants**

During the recruitment period, community members were quite open and responsive to the project description. Many expressed interest or directed attention to other community members who they thought would be good collaborators for the project. KKUB drew a total of 18 women and 20 men between 15 and 33 years old (Table 11). The three boys aged 15 understood that the project was only for those over 18 years old, as it had been posted in the recruitment material and were not allowed to participate.

Other than age, the only requirement of the participants was that they must be able to regularly attend KKUB sessions. All of the exercises were ensemble-based and required group participation. As such, only excused absences or emergencies would be accepted. Halfway through KKUB, participants' attendance record was evaluated to determine who should be allowed to continue with the project. KKUB participants with fewer than two unexcused absences were allowed to continue with the drama performance portion of the project. Of the original participants, 13 men and 12 women, between 18 and 26 years old, completed all workshop and performance intervention sessions (Table 11).

**Table 11: KKUB demographics, ages**

KKUB Participant Ages		
Initial Attendance		
	<b>Years Old</b>	
	15 (excluded)	3
	18-19	12
	20-21	8
	22-23	4
	24-26	9
	29	1
	33	1
Completed KKUB program		
	<b>Years Old</b>	
	18-19	12
	20-21	4
	22-23	3
	24-26	6
	Total	25

Table 12: KKUB demographics, household size

Household Size	
Live alone	7
1-2 people	4
3-4 people	7
5-6 people	5
7 or more people	2

The 25 participants who completed the entire project anonymously provided demographic information. Participants came from varying household sizes: seven lived alone; four lived with 1-2 people; seven lived with 3-4 people; five lived with 5-6 people; and two participants lived in household with 7 or more people (Table 12). Two participants had children of their own. The majority of participants (18) had completed secondary school; two had some secondary education; one participant was currently in medical college; one had received a diploma in computer technology; and three declined to answer. All but three had previously participated in some sort of continuing education workshop, class, or seminar in a variety of topics from computer technology to cooking (Table 13). Four participants had prior informal education in health topics, one in general medicine, and three in HIV/AIDS. Only one of the 25 participants was employed. He used his annual leave time to participate in KKUB. One other participant was currently in college during KKUB. The other 23 participants had no regular employment during KKUB. Of the 25 participants that completed the project, 15 had personally been involved in a road accident and 19 had a family member or

close friend involved in a road accident. Only four participants did not consider themselves touched by road traffic accidents (Table 14).

**Table 13: KKUB demographics, education**

KKUB Participants' Prior Education	
Formal Education	
Some Secondary School	2
Completed Secondary School	18
Some Post Secondary School	2
Prefer not to answer	3
Informal Education	
Attended Prior Workshops	22
Topics:	Computers Cooking HIV/AIDS General Health

**Table 14: KKUB demographics, road traffic injury**

Road Traffic Accident/Injury History	
Personally Involved	15
Family or Close Friend	19
No History with RTI	4

### 6.3 KKUB Results Discussion

At the conclusion of the workshop and performance series we engaged in a period of group reflection. Eight participants chose to discuss the experience through a focus group, while seventeen completed an open-ended survey. Four months following the completion of the project, we held a second focus group to

assess longitudinal responses. Six KKUB participants attended the second focus group. These formal responses combined with the informal notes taken daily throughout KKUB and the responses from the ten community leaders who witnessed a rehearsal contributed to the evaluation of KKUB's goals.

The themes resulting from the KKUB participants, the community leaders, and workshop notes were organized to answer five questions related to the project aims:

*Aim: Encourage community members to self-identify the scope of road traffic injuries locally and to self-identify solutions. Guide community members to collaboratively create their own drama intervention on road safety.*

1. Can drama exercises guide community members to collaboratively assess local problems and find solutions?
2. Can amateur community participants create an educative performance play on road traffic injuries through dramatic exercises?

*Aim: Increase knowledge among primary school students of safe pedestrian behavior.*

3. Does a play created by amateur community members have the capability to provide education?

*Aim: Increase young adults' confidence as engaged community advocates and educators.*

4. Is a community driven drama intervention appropriate when providing pedestrian education?

5. Will a drama-based workshop encourage young adult community members to be better educators and advocates for their community?

### **6.3.1 Can drama exercises guide community members to collaboratively assess local problems and find solutions?**

#### ***6.3.1.1 Teamwork and Collaboration***

One primary aim of KKUB was to examine a process whereby community individuals could self-identify the scope of a problem and self-identify the solutions to that problem. Guiding participating community members in this process, drama-based exercises were used for a deeper level of exploration and understanding of road traffic injuries. This collaboration between the group leader and between individual community members is essentially a team process. The majority of participants enjoyed collaborating with one another, especially by the end of the project. We can see this through their willingness to participate during KKUB exercises; in the positive comments they made during the daily feedback sessions; and through comments made at the end of project. As one participant put it, “it is good to work together because it helps us educate the community without discriminating [against different people’s ideas].” Several other participants mentioned that collaborating helped them to get along and to reach the “goals” of making a good play.

This willingness to collaborate was something that evolved during the process. Feedback was limited during early workshop sessions and individuals did not always consider each other’s ideas before offering a brand new idea. As



one participant put it, some ideas expressed in the beginning were “impossible” and did not consider the whole group. The practice of beginning each session with warm-up exercises and drama games helped to encourage KKUB members to work together.

KKUB participants highly valued the warm-up exercises and games. During the daily feedback discussions, the most common comment stressed the importance of participants’ ability to show up at the start of each session so that everyone could join in these exercises. Those who arrived on time felt disrespected by chronically late members and emphasized the need for the group to be “serious” about the work. Those who arrived on time and participated in the group bonding exercises were generally more satisfied at the end of the day than late participants who missed these activities. When the time came to evaluate attendance records and determine which KKUB participants would be allowed to continue to the performance section of the program, the majority of people who were removed from the group were also those who routinely did not attend the warm-up. See Appendix B for examples of warm-up exercises and stage one activities.

#### **6.3.1.2 Collaboration vs. Competition**

However, unexpectedly, participants also introduced the idea of “competition.” The term ‘competition’ first emerged in the second week during KKUB feedback sessions. During discussions participants would not only use the Swahili term *ushindani*, but would also drop the English words “competition” and

“compete” into Swahili conversation. The term ‘competition’ emerged around the same time that we began stage 3, theatrical creation activities. Several of our feedback sessions ended up discussing whether or not we should add a competition to the project.

The concept of competition is not unheard of in dramatic arts. Certainly, when producing a professional project, there are usually a series of auditions to choose actors. If the project had used a previously scripted play, an audition process could have been used to select actors, whether amateur or professional, to portray the characters. Though a few participants were familiar with this traditional form of entertainment, this is not the only explanation for the desire for competition. While preparing for this project, I visited and watched local arts groups. During several of these meetings I witnessed the group leader give two or three actors an improvisation prompt. The actors would begin a scene using this prompt. At the end of the scene, without comment, the leader would call a different group of actors to repeat the prompt. This process might go on through several groups of actors. Sometimes the members would have an opportunity to judge who was the ‘best’ with the prompt. Only on two occasions did I witness any explanation as to why one group attempting the prompt was better than another group. In those instances, comments were made indicating that one group had more “feelings” or better reflected how a mother/father/sister “should react.”

Among KKUB participants there was not a clear understanding of how we should incorporate a competition. The only specific recommendation regarding a

competition was to use it to eliminate 'weaker' participants. For instance, we might have used an audition process midway through KKUB to assign participants character roles for the final performance. Or, we might have voted on participants who created the best scenes and eliminated the rest. However, no one suggested a specific type of competition such as these examples. Instead, participants discussed the merits of competition abstractly.

There were vocal proponents both in favor and against adding competition. Because the purpose of the project was both to educate primary school students about pedestrian safety and to embolden community participants to shape the intervention itself, the discussion was allowed to continue, striving for a consensus. Out of concern that a minority was dominating the discussion, we requested that all participants speak to either the translator or the group leader and give their opinion about adding a competition element to the project. Listening to participants individually, it was decided that the majority would prefer not adding a competition and we continued as previously planned.

Because it dominated a good portion of the daily feedback, at the end of the project the participants were asked to reflect on the idea of competition. Most participants were glad that we did not add this element and repeatedly emphasized that we needed to work as a team. One participant suggested that she was too shy to join in a competition and was concerned that if we had used one, she would not have been able to share in the education. She felt this would be unfair to the community as many people are shy like her and they also need education. Another participant expressed similar concerns, saying that it is good

to work as a team because the goal is to educate the community, but working through competition encourages discrimination among people.

Those who appreciated competition believed that it would increase participants' attention, would improve an individual's ability as actors, and would encourage harder work. Several mentioned that a competition would make everyone focus better on the material. One participant said that they liked the idea of competitions because "they challenge people to aim higher." Several others expressed liking the idea of a competition, however felt that this was not the place for it. Others said that a competition would only give people "bad feelings." One participant acknowledged that a competition might improve one's ability, but that the winners would become "arrogant and feel they are above everyone else." Another comment said that competition would make people "too proud." One participant said that while competition can be good, it focuses too much on the individual while the project was meant to focus on working as a team. Another concern voiced by several participants was that the winners of a competition would forget that the performance goal is to educate. Though this debate over the idea of competition might have derailed the final play, after it was decided to have no competition, all the participants continued to work enthusiastically toward the goal of creating a play for primary students.

#### **6.3.1.3 Seriously Competitive or Serious Educator**

All the participants were concerned about being *makini* – serious. Even when speaking in Swahili, participants would usually use the English word

“serious.” Many of the daily feedback sessions would include a discussion about being ‘serious.’ Often this conversation would return to the discussion of whether or not we needed a competition. Both participants who wanted a competition and participants who wanted teamwork defended their positions with an argument about ‘seriousness.’ For example, some participants felt that they could demonstrate their personal seriousness by being the best in a competition. Other participants felt that a competition distracted from our purpose of educating and thus showed those people’s lack of seriousness.

On occasion, the participants would ask me, as the leader, to comment on this issue. It was hard to strike a balance between the ongoing discussion of seriousness and my personal goal to get participants to contribute openly and playfully through the drama exercises. Many of the exercises, especially during the daily warm-up period, encouraged abstract sound and movement and our advanced activities relied on freedom for improvisation. Additionally, the participants were reminded to think of our intended audience, school children, and how the play could balance “seriousness” and making the messages palatable for the audience. While the goal was for the participants to evolve the creative process itself, my concern was that an overemphasis on being “serious” would stifle the group’s freedom to explore through the drama exercises.

To clarify the dilemma of seriousness KKUB participants were asked to define the concept on their individual surveys. Despite the ongoing discussion during daily feedback sessions, in their individual responses participants gave nearly identical descriptions of the concept. To be serious is to be focused, fully

concentrating on every practice and performance, and to be careful with one's work. To be serious is also to be attentive and to participate voluntarily without being forced into activities and exercises. Finally, a few participants commented that being serious was to appreciate something as it expressly related to the community. That is, they were being serious when their improvisations reflected the problems in the community, but they were not being serious if they improvised scenes with wild, un-relatable ideas.

Though their pledge to 'be serious' manifested itself in different ways, the almost daily reflection demonstrates the participants' commitment to the project. The fact that this entered the conversation concurrently with our development of the final performance piece suggests that the group felt responsible for creating a meaningful intervention for the community. Achieving this was one of the principal objectives of the project. Even though they had difficulty reconciling their ideas, these participants were struggling towards the same goals. A majority of participants stated that they were pleased with the final play and/or that the final performance was their favorite part of the project. They were able to reach an eventual consensus and find self-satisfaction in the final product. The ongoing drama exercises that encouraged collaboration and ensemble building may have contributed to the group reaching that point of satisfaction.

The participants were ultimately happy with their final creation, however these intersecting issues of competition, teamwork, and seriousness complicated the aim of having a collaboratively created drama intervention. In a collaboratively created peace all participants' ideas and opinions should have

equal weight. In that circumstance, participants would have equal opportunity to contribute to the final education message. The group's struggle with the concept of competition versus teamwork questioned certain individuals' right to contribute. A competition suggests only the winners have the right to contribute to the creation or performance of the drama. Furthermore, when an individual would question the seriousness of other members of the group, he or she implied that those less serious did not contribute valid ideas.

The differing viewpoints may have reflected the participants' different levels of experience and background with both education and performance activities. Those with prior performing experience might have felt more serious because of prior artistic experiences, thus implying that non-performers had less valid ideas for creating drama. Meanwhile, those who had prior involvement in education or advocacy might have felt more serious about the education goals. Integrating the group's ideas in this respect was challenging. To have a truly collaborative final performance piece, we needed to balance people's ideas without alienating them. This meant participants had to make compromises to work together. This is a trade-off project coordinators must consider when deciding whether to use amateur or professional actors for a drama intervention.

One possible solution to this challenge would be to restrict the number of people allowed to participate in KKUB. The project relied on the cooperation and collaboration of those involved. We chose not to restrict the initial number of participants to compensate for inevitable dropouts. We also overcompensated to ensure that a certain percentage of those who continued to attend would be

active participants. Furthermore, the benefit of keeping the workshop group large was that we were able to incorporate many different viewpoints about the problem into our exploration. If KKUB had ended with the workshop itself, having a large number of participants with different ideas would not have caused any problems. Because KKUB sought to have participants collaborate on a final performance piece, participants had to compromise.

Another alternative for future amateur driven drama interventions could be to use a previously created community group for the actor-participants. This group would not necessarily need to have prior art experience or be a group of performers. Any community group that regularly met and were willing to explore through applied theatre activities could be used. This would alleviate many of the problems that arise when working with strangers. However, this also runs the risk of eliminating viewpoints from the topic one is trying to address.

One primary aim was to have community participants self-identify the scope of road traffic injuries in Moshi and self-identify the solutions needed to address road safety through applied drama exercises. Though the participants struggled with issues of competition and teamwork, nearly all of them were active contributors throughout KKUB. The ensemble-based drama exercises, especially the fun and engaging “games,” encouraged the group to collaborate. Having a variety of opinions was more challenging but also resulted in a more rewarding and diverse final play. In their final responses nearly all of the participants commented that the school performance was their favorite part of the



project. This suggests that despite compromises made along the way participants were satisfied with their contribution to the project.

### **6.3.2 Can amateur community participants create an educative performance play on road traffic injuries through dramatic exercises**

#### ***6.3.2.1 Road Traffic Injuries, From Acting Games to Teachable Lessons***

During the course of KKUB participants were given the task to create a final performance piece that would educate primary school students about road traffic injuries. Initial drama activities encouraged them to explore the issue abstractly through sound and movement. Some had difficulty with these abstract exercises and cooperation was varying during the first two sessions. This hesitation decreased by the end of the first week and participants were more comfortable sharing with the group. The next level of dramatic exercise incorporated guided observations and role-playing. Participants demonstrated to the group activities related to road traffic injuries that they felt were dangerous (Table 15). Through repetition and role-play the group was able to explore safer behavior. This developed into the education themes that the group wanted to teach in their play (Table 16).

**Table 15: Problems identified during exercises**

Causes of injury in Moshi	
Children like to play in the road	Overcrowded vehicles
Lack of education	Distracted drivers
Everyone walks in the street	Police corruption
	Bad vehicle
People do not wear helmets	maintenance
Drivers do not watch for pedestrians	Drugs and alcohol

Table 16: Solutions identified during exercises

Behavior to teach children	
Don't play in the road	Look both ways when you cross the street
Walk on the side of the road, even in groups	Cross with the shortest distance, a straight line
Walk facing traffic	Don't expect vehicles to stop for you
Use zebra stripes and follow street signs	Listen to adults

The group was successful in identifying several types of dangerous community behavior. The two most common themes that participants enacted during activities were playing in the middle of the road and the emotional and practical consequences of a serious road injury. These two ideas became the central subjects of the final play. Another topic the group explored included the role of adults and community leaders in protecting children from road traffic injuries. The following are examples of some of the scenes participants created during KKUB that would be played multiple times, allowing participants to enact different outcomes.

1. A mother is angry with her children for getting in her way while she attempts to cook. She orders them to go away. The children leave the house and begin playing in the road outside. While they are playing they do not see a man coming towards them with a heavy load of water containers on his bicycle. The man does not see the children because he is concentrating on keeping his containers balanced. At the last moment, the man sees the children and swerves his bicycle to

avoid them. His bike falls over and he loses some of his water containers. He is very angry and yells at the children. (KKUB session #4)

2. A man invites a lady out on a date and she accepts. She likes the man and chooses her outfit carefully to meet him. She is happy about her appearance. She calls a *piki-piki* to take her to the meeting place. The driver does not have a helmet for the girl. The lady does not mind because she does not want to damage her appearance. The driver hits a hole in the street and they crash. The date thinks that the lady has decided not to meet him. (KKUB session #5)
3. A group of friends are walking in the street. They are supposed to be in school but they did not feel like going. They begin arguing about what they want to do for the rest of the day. They do not see a small bus driving up behind them. The bus driver is talking on his mobile phone and is distracted. The bus runs through the group of friends and many of them are hurt. (KKUB session #4)

Not all of the group's ideas were suitable for the intended audience. For example, the group often suggested the idea of police corruption as a main cause for road traffic injuries. The group also incorporated drug and alcohol abuse into their scene work. These ideas manifested in several of the scenes including: drunk police officers, police officers taking bribes from taxi drivers with bad vehicles, and police officers that allow buses to be dangerously over packed. Though these are problems that participants recognized as true for the

community, we discussed as a group why those ideas might be less helpful for primary students.

The group exercises did not always lead to useful material. On occasion participants would be sidetracked with off target scenes. The leader did not directly stop them from “off target” scene work that they had prepared. For example, in session five, some participants presented the following scene:

A group of ‘bad’ young people is in the middle of a street playing cards and smoking. Vehicles have to swerve around the children in the street. An adult comes by and reprimands them, telling them they should be in school. The young people make fun of the adult, but lazily get up. Meanwhile a teacher is teaching road safety at a school with several children. When a child gets an answer incorrect the teacher beats him. The ‘bad’ kids arrived at the school. The teacher tries to teach them all but the ‘bad’ children are very disruptive. Then the bad children begin to beat up the teacher. The teacher leaves but later he returns with police officers. The police officers beat up the bad children and take them away.

The scene did incorporate some aspects of road traffic safety, however the thrust of the scene was more about misbehaving and participating in drugs and gambling. Though this scene could not be added to the final play it was important to keep an open environment for exploration. The group was reminded that it was their responsibility to educate the primary students through their own creation. Therefore, we discussed as a group which pieces of the scene might

bring pedestrian messaging. From this scene we salvaged: the concept of a teacher teaching school students about road safety and how being lazy and not going to school can keep you distracted when you are in the road.

### **6.3.3 Does a play created by amateur community members have the capability to provide education?**

#### **6.3.3.1 Test score results**

The final product of KKUB was a collaboratively created performance piece on pedestrian and road safety. This performance piece was completely dependent upon the participants' ability to identify the problem of road safety and identify good solutions for their community. The leader was present to help guide them through the drama exercises and to help them fashion the piece for children, but did not significantly contribute to the story or messages. If it had been necessary, the leader would have prevented them from putting in erroneous information. However, using their own experiences, participants discovered safe solutions to the problem.

Ten community leaders attended the guest invitation performance rehearsal and anonymously completed an evaluation form. The leaders provided constructive criticism, but generally expressed enthusiastic support for the play. The leaders were able to correctly identify the road and pedestrian safety lessons that the participants were trying to teach. Though the participants created the play specifically for young children, half of the leaders felt that the play was appropriate for teenagers and older people. It was suggested that the play be

videotaped and displayed on television. It was also suggested that the performers participate in local community events for all ages.

The final play was very simple and had to be short to accommodate the primary school schedule. It included some scenes that may have strayed too far from the education. For example, scenes between the shopkeeper and children reiterated that adults want children to be safe, but did not present new information about how to be safe. The characters may have been one-dimensional caricatures. A professionally scripted play would have focused the plot and fleshed out the characters. However all of these ideas came from the participants' hearts and minds and reflected their perceptions of the community. They were comfortable with the situations and identified with the characters. It is a reasonable assumption to make that the situations and characters would be equally identifiable to the student audiences who share similar backgrounds with the participants.

While it may be argued that professionals would create a more educational and entertaining play, the bottom line is that this community collaborative play did bring education to the students. The children at all four schools showed statistically significant improvement in their test scores. This improvement was equal among boys and girls and among all ages. The improvement was detected despite the differences of each school.

The participant-actors had to adapt to the environment at each school. This included different playing spaces, different levels of school organization,

different levels of teacher involvement from completely absent to monitoring the event, and vastly different audience sizes from around 150 to over 400 children. Though we cannot say if this new knowledge will be retained or if the children will act on the new knowledge, we can conclude that a community driven performance has the capacity to educate children on simple lessons of pedestrian safety.

### **6.3.4 Is a community driven drama intervention appropriate when providing pedestrian education?**

#### ***6.3.4.1 This is Our Chance***

Drama based interventions can generally be broken down between those that use professionals and those that use amateur community members (Figure 2). Professional acting troupes may or may not incorporate local community stories into their scripts. There are many benefits to using professionals and professionally written scripts for education and advocacy purposes. However, this structure takes time and resources to implement. By using local residents, KKUB sought to increase young adults' self-efficacy and empower them to take a proactive role in addressing the community's problem of road injuries. Of the 25 people who completed the project, only two of them desired more professional advice from outsiders. Many of the participants reported that KKUB was their "chance" for education and experience and they would not have wanted that taken away from them by using professionals instead of community members.

#### **6.3.4.2 *Our Truth is Better Than the Professional Fiction***

Both in the focus group and in the surveys, participants reflected a sense of ownership of the material. Though the play was uncomplicated and entertaining for young children, several participants stated that the play was “more true” because it came from their personal observations about road safety. As one participant put it, “the play is better than an outsider’s fictional idea.” Several participants expressed doubt that professional outsiders could grasp how widespread the problem of road injuries is in Moshi. They were concerned that outsiders would not have the community’s best interests at heart. The professionals would only be educating because it was “job” and they would only be “working for the money.” They stated that even if a professionally scripted project might have more sophistication and deliver education messages more artfully, it would be “less meaningful” because our group worked for “our relatives.” As another participant put it, “we are more committed to performing effectively because we are doing this for our own community and our young brothers and sisters.”

The value of young adult community members as the driving force of this road and pedestrian safety intervention was not lost on the community leaders who visited the project. Ten community leaders attended a rehearsal performance and evaluated the play through anonymous response cards. These leaders held a variety of positions in the community including social workers, health researchers, and teachers. Only two of the ten leaders felt that the play would be improved with a professionally written script, however all of the leaders



felt that it was important that community members were controlling the intervention. Some of KKUB participants specifically commented on the benefits of including community leader feedback, stating that they were glad the leaders enjoyed the performance. As one participant put it, the education in the play was validated because the leaders “accepted the performance.”

#### ***6.3.4.3 Controlling the Message***

These themes of “our chance” and “our truth” express a desire among the participants for control over the development of their own community. Unfortunately, potential participants were not interviewed before KKUB began so we cannot say that the drama workshop increased participants’ desire for an active role in the community. However, the fact that so many participants specifically referred to KKUB as “our chance” that they did not want taken away, suggests that they viewed KKUB as an uncommon opportunity. Certainly a workshop or seminar style program is not unusual for Moshi; 22 of the 25 participants had been involved in some type of non-formal education in the past (Table 13). It would be interesting to know the curriculum of those programs to see if any of them involved an element of the participants taking charge in the community. It is unlikely that the computer, cooking, or general health programs had an element of peer-education or “teaching the teacher.” It is possible that the HIV/AIDS programs encouraged participants to become advocates, though the programs may or may not have facilitated that advocacy.

Furthermore, it is unlikely that any of the previous workshop experiences allowed the participants to lead the exploration of the topic as thoroughly as they did in KKUB. Though the central topic was road and pedestrian safety, the curriculum was designed around drama activities that forced participants to explore road safety for themselves. The KKUB leader came prepared with road and pedestrian safety ideas taught in America and other high-income countries. However, not all of these ideas are relevant in a setting such as Moshi, Tanzania. For instance, Moshi has no streetlights despite being a semi-urban area with many vehicles on the road. There are currently only four zebra stripes (crosswalks) in the city and street signs are infrequently used. In this environment, KKUB participants could exploit their position as community members to prioritize road and pedestrian safety lessons they found to be the most important. This ability to control the message was also supported by participant commentary that their play is “more true” than an outsider professional play.

Through KKUB participants were given the chance to collaboratively create education messages on pedestrian safety that they felt were “true” to Moshi. The validation from community leaders helped KKUB participants to recognize that their play would positively impact the community. Their ability to create and perform a play with their own safety lessons demonstrated their ability to be advocates and educators.

#### **6.3.4.4 Contradiction? Show Me the Money**

The participants' contention that they are motivated by a desire to help their neighbors, while outsiders would be driven by money is possibly a contradiction to statements elsewhere in the same survey in which they suggest less serious participants only attended KKUB for the financial incentive. The participants clearly valued the financial support they received from participating in the program. Only one participant had a formal, full time job and others may not have had any other sources of income. However, if we add the daily travel benefit (2,000 TZS), which was only given when an individual attended a session, to an individual's compensation for participation (50,000 TZS), the most money one person could have received was 86,000 TZS (\$53.75 USD). A conservative estimate of the time commitment for the project was 58 hours. These means participants at best made 1,482 TZS (\$0.92) per hour. This should not be considered undue influence for participation.

Participants used the same language, 'they just want money,' to chastise group members as they used to rebuke potential outsiders. However, this is not necessarily a contradiction to the idea, which the same participants expressed, that the group was more invested in road safety than outsiders would be. Even though 86,000 TZS is a lot of money for many people, participants had to dedicate a considerable amount of time to achieve it. In the anonymous open surveys, no one claimed the financial incentive as the reason for their participation. It is certainly possible that participants chose not to tell the truth about themselves. However, if they were hiding their true motivations, then it

suggests that they believed that they should be driven by improving road safety even if circumstances meant the money was the most important benefit. Furthermore, at the four-month follow-up, none of the focus group participants mentioned financial gain.

### **6.3.5 Will a drama-based workshop encourage young adult community members to be better educators and advocates for their community?**

#### ***6.3.5.1 Contributing to KKUB***

When we began KKUB, only a few participants felt comfortable talking about their experiences with road traffic injuries even though nearly all participants identified themselves as being affected by them. The drama activities were intended to help participants explore their own feelings as well as make them more considerate of other's feelings about the problem. Many participants identified the exploratory work of stage one as well as the ongoing warm-up activities as their favorite parts of KKUB. During the course of KKUB, there was an increase in levels of participation and involvement with each exercise. This reflected the participants' growing comfort with both the subject of road traffic injuries and comfort with the drama exercises. By the time we moved into the play creation, most of the participants were able to express concepts regarding road traffic injury prevention.

As KKUB continued, participants' became more willing to contribute during the daily feedback sessions. While initially feedback sessions were dominated by a few individual voices, by the end everyone wanted a chance to express their opinions. The early feedback sessions also held less meaningful content than

those later in KKUB. During the first sessions much of the feedback was simply “yes” or “no I didn’t like the activity.” As we continued, the discussions centered on process and included debate about how best to educate the primary students about road safety. The daily feedback sessions grew longer towards the end of KKUB until we were consistently running over the scheduled time for the day. Though it was sometimes difficult to balance everyone’s opinions, their willingness to speak out and contribute was crucial to the creation of a collaborative performance. At the end of the project, only five out of 25 people said they did not enjoy public speaking. Those five people were still able to contribute to KKUB’s overall success by helping to organize children during the intervention and by administering the surveys. Furthermore, all of the participants reported a wish to continue as educators in some capacity.

When the project ended all 25 participants expressed a desire to continue KKUB. Some of them wanted to continue taking the road safety play to other schools and events. Others were ready to repeat the entire process and collaborate on a new play with another important community problem. The most frequent request was to repeat KKUB with the subject of HIV/AIDS. The next most popular requests were to study violence against women and genital mutilation, drugs, and street children. Other requests included malaria, the environment, and pregnancy.

#### **6.3.5.2 Contributing to the Community**

At the end of the project, several of the participants reflected that their ideas about speaking out about road safety had changed. Many claimed that they used to only think about road traffic injuries when they saw accidents, but that now they think about it often. One participant even noted that accidents are so common in Moshi that he never thought about them before KKUB, but now he thinks about the people involved and how they are hurt. As one participant said, she “feels bad” when she sees bad driving and pedestrians engaged in risky behavior, but now “I can make a difference because I know what road safety means.” One participant reflected that road safety is everyone’s “individual responsibility,” but that “people should protect their neighbors and remind them about road safety.” Another participant said that KKUB “opened my eyes” about road safety and enthusiastically commented that, “I will continue to spread knowledge to others in Moshi and the whole world!”

Four months following the end of the project we held a follow up focus group to investigate whether participants had followed through with their desire to continue participating in community development. Prior to the project, one of the participants was a member of the local HIV Community Advisory Board, a group that meets to discuss research and health issues related to the community. Two months following the completion of the project, eleven of the participants joined this advisory board. Others wanted to join but were turned away because CAB was full. There is no financial incentive to participating with the Community Advisory Board. Members receive a soda and 2000 shillings for travel only.

Six of the former KKUB participants participated in the follow-up focus group. Five of the six said that completing KKUB directly led to opportunities for other work. Three of those opportunities were within education and advocacy. Two positions were arts or performance related. The sixth participant said he had been struggling finding work, but had been able to volunteer with the police school. Though they are not all participating in education activities, four of the participants recalled instances where children who had seen the performance still call them “teacher.” Four months later and children come up to them and report that they walk on the correct side of the road and that they look both ways before crossing the street. The children tell them that they talk to their friends and warn them not to run out in the street. The participants reflect that they love being called teacher and that they feel proud to be remembered in such good ways.

During KKUB there was growth among participants and their willingness to confidently speak out about their ideas. This was also reflected at the four-month follow-up point. Participants reflected that they were better advocates for themselves and better at interviewing for job positions because of KKUB. Four of the focus group reported that they now have confidence to speak without fear. One participant says that she yells at *piki-piki* drivers who aren’t wearing helmets and at drivers who are texting or using their mobiles. She even reprimands pedestrians who are behaving unsafely and she “doesn’t care if they give her a mean stare back!”

All six of the follow-up focus group participants are also members in the Moshi Community Advisory Board. This board is made up of adults and young

adults in the community. The participants said that they are no longer afraid to speak up in front of adults. They report that some adults in the group might try to “put them down” because of their age. They feel, however, confident that their ideas can contribute to the discussion. They said that in the past if an adult had told them “they should do something” even if it was difficult, without telling them why, they would have done it but would have felt resentful. Now, they say they feel empowered to speak up for themselves.

#### ***6.3.5.3 Self Efficacy and Becoming a Community Leader***

The trajectory from hesitant to enthusiastic in a private group, then beyond to actively seeking community engagement, demonstrated a growing sense of self-efficacy among the participants. KKUB supported this growth by providing a safe atmosphere in which the young adults were praised for any contribution they brought to the group. They were allowed to explore and test out strategies for road safety without judgment. For those that wished it, they were given the opportunity to direct each other in scene work. Additionally, the experience of teaching local school children proved to the participants that they were capable educators.

The success of KKUB in this regard may be attributed to the way the drama exercises fit Albert Bandura’s framework for applying Social Cognitive Theory to health behaviors [84]. The activities helped them to understand the scope of road injury in their community. The scene work provided them the chance to explore the negative health outcomes associated with road injury and



positive outcomes in proper safety behavior. They developed personal strategies for preventing road injuries for themselves and for the community. They also recognized their ability to control their own behavior and encourage behavior change in others.

The comments from the six participants four months later showed that this personal growth was not limited to KKUB. They followed through participating in community education and advocacy. They speak up among their peers and among adults. Those who spoke in the follow-up focus group showed they are not ashamed of their opinions. Though some adults may not yet respect them as leaders (they “put us down”), their place as “teachers” continues to be supported through the audiences they reached during the drama.

## 7 Discussion

This study demonstrates that *Kutenda Kwa Usalama Barabarani* was successful in guiding young adult community members to collaboratively create a play on road safety that taught pedestrian lessons to local primary school students. In the course of KKUB, participants were able to access the issue of road traffic injuries, discover their own ideas of how to address the problem locally, and teach local primary students their ideas through performance. This supports previous research indicating that theatre can be used to spread health messages [41, 82, 96]. It also supports previous research showing that community theatre can be used to influence beliefs and behaviors [97-101]. This study introduces the new idea that a theatre intervention can still be an effective education tool when created by community members with little professional guidance. The methods of this project contribute to the scholarship of theatre for education and development. Most importantly, this project establishes an inexpensive method for working with amateur community members on a targeted local problem.

Theatre provides a safe space for participants to explore fictionalized situations, to test out actions and reactions, and empower the powerless. If theatre can be so transformative, why isn't it used more often in development? A leading researcher of applied theatre techniques, Tim Prentki suggests that despite years of use, there remains a perception that theatre belongs in the arts world and is not a true development tool. Prentki warned that unless theatre interventions are "firmly rooted in the policies of aid agencies and governmental

and non-governmental organizations” then they risk becoming “light-hearted pieces of window-dressing or confined to discrete projects which do not have an impact”[102] (p. 429).

In the last decade there has been an increased usage of theatre for health and development interventions. However, most research on the efficacy of these programs has focused on either drama therapy or performance programs developed by professional educators, professional actors, and play writers [103, 104]. Sometimes these outsiders seek input and collaboration from local community members. However, it is a growing belief that for theatre to be an effective tool with community participants, a project must be carefully planned and thoroughly researched [41, 65]. Prior research has shown that performances based heavily on ethnographic material can impact a target audience by communicating the human experience. When an individual's personal narrative is integrated with “clinically sound content” [105] it can successfully deliver complex health messages [105-109]. However, this type of theatre creation is resource and time intensive. Trained researchers collect information through multiple sources including interviews, focus groups, diaries, and published material. Professionals evaluate and edit that material to best fit the messages they want to deliver. Experienced actors and playwrights are used to re-create those narratives for public consumption. Though this type of theater intervention can have a positive impact on the target audience, it places the power for change firmly in the hands of outsiders.

As the scripted performance has become a more refined tool for health and development interventions, performance has strayed from the founding ideals presented by Augusto Boal when he created Theatre of the Oppressed:

“I believe that all the truly revolutionary theatrical groups should transfer to the people the means of production in the theatre so that the people themselves may utilize them. The theatre is a weapon, and it is the people who should wield it.” (Boal, as quoted by Jane Plastow p. 294) [\[110\]](#)

Most importantly, theatre interventions are losing the democratic ideals that empower participants. Meanwhile, in the art world, actors continue to explore new ensemble driven methods of creating theater [\[111, 112\]](#). In KKUB, using a basic curriculum of acting exercises, applied theatre techniques, and Boal’s Games for Actors and non-Actors, our amateur community participants were guided in an exploration of an important local topic. Furthermore, we were able to investigate an issue critical to this community but with little monetary or policy support even though it is not usually addressed with drama and performance: road traffic injuries.

When theatre interventions are driven by outsiders, it is reasonable to question whether their priorities align with the priorities of the targeted community. This concern was clearly recognized by the participants who felt that outsiders, even those well educated to the topic, would have different priorities compared to people who were working for their “brothers and sisters.” While the participants may have been underestimating the positive intentions of development aid workers and professional artists, prior research has noted that

differing purposes can hinder the intervention process[[46](#), [113](#)]. Prior studies have also shown that participants in community driven theatre interventions demonstrate investment and ownership of their ideas [[114](#)].

This study supported prior research that suggests that participating in theatre-based workshops can improve participant's communication skills, increase their knowledge and understanding of a particular topic, and can instill feelings of empowerment [[64](#), [109](#)]. As seen elsewhere, theater is a tool for helping community members better understand viewpoints and experiences of others in the community [[115](#)]. This study also adds to the growing knowledge of amateur, community-driven theatre education programs [[71](#), [74](#), [103](#), [114](#), [116](#)].

## 8 Limitations

The success of the program can be attributed to several factors. The young adult KKUB participants were enthusiastic and were willing and able to contribute significant time to their participation in an arts program. Community leaders, including the Moshi Municipality Board and local school headmasters, were receptive and open to these young adults bringing their performance to the schools, despite the unproven nature of the education. However, there were a number of limitations to this study.

### 8.1 Comparison Group and Knowledge Assessment Survey Validity

Though we showed an impact in pedestrian education, this is not to suggest that performance is the best type of intervention for road traffic injuries in Tanzania. Previous research has examined more comprehensive programming that can have a greater impact both on pedestrian education and behavior [15-17]. Due to limited resources, this study did not do a comparative analysis between drama education and traditional education for road safety. Amend, an American non-profit and registered NGO in Tanzania, has provided road and pedestrian education to students in Dar es Salaam through more traditional means [26]. This program has been evaluated using a similar true/false knowledge retention survey.

There are many similarities between the two communities of Dar es Salaam, where Amend's traditional program takes place, and Moshi, Tanzania, where KKUB took place. Children face similar types of vehicles, contend with

similar issues of road repair, and equally suffer from poor regulation and policy. However Dar es Salaam is much more urban and has significantly more traffic congestion than the semi-urban Moshi. Because of the differences between the two communities, some small adjustments had to be made to the knowledge survey Amend provided. For instance, Moshi has no traffic lights and so this question was replaced. Because of these changes and without further understanding of Amend's curriculum, a direct comparison between Amend and KKUB cannot be made even though both targeted pedestrian education to Tanzanian primary students. However, it is interesting to note that the classroom intervention increased students' score by 16.6 percentage points and KKUB increased students' score by 12.99 percentage points [117]. A more systematic analysis and an identical knowledge retention test would be needed to make meaningful comparisons between these two programs.

The exact knowledge retention test used to evaluate student audiences has not been validated. As discussed earlier, there is some indication that children had difficulty comprehending two part questions. Further analysis would be needed to determine if this was a problem with the survey or with children's comprehension of the subject. A further limitation was that children were administered the pre- and posttests in groups of ten. It is possible that a small portion of the students copied each other's answers, though this was discouraged during administration. Finally, the simple test and group environment may have led to test learning instead of concept mastery.

## **8.2 Behavior Change vs. Education Change**

KKUB participants who attended the follow-up focus group expressed anecdotal evidence that primary school students were still thinking about pedestrian lessons. However, the students were only evaluated immediately following the performance intervention. With more resources, the knowledge test could be repeated with the primary school students to evaluate long-term retention of road and pedestrian safety lessons. Furthermore, it is important to note that this study only measured changes in knowledge not changes in behavior. As noted by other pedestrian safety programs, improvement in knowledge does not necessarily translate into safer behavior among children [14, 17].

## **8.3 Drama Limitations**

In addition to lacking a comparison to traditional educational material, my evaluation is limited by the nature of drama itself, which requires enthusiastic participation from all parties. The main purpose of the program was to use drama to guide community members to self identify the scope of the problem of road safety, self identify solutions, and teach primary students through performance. Participants must feel safe and comfortable to explore the problem, improvise, and take risks during the drama workshop. KKUB was held in donated space from a local Christian church. Though in a quiet area of town, the space was not completely private and non-participants could drop by at any moment. In addition there were perhaps too many participants in KKUB. A number of participants



attended all required workshops however some individuals were inconsistent. Individuals with inconsistent attendance had to be cut from the program. This instability may have distracted committed participants. Though KKUB was taught with a translator, lack of nuanced communication was a limitation in this project.

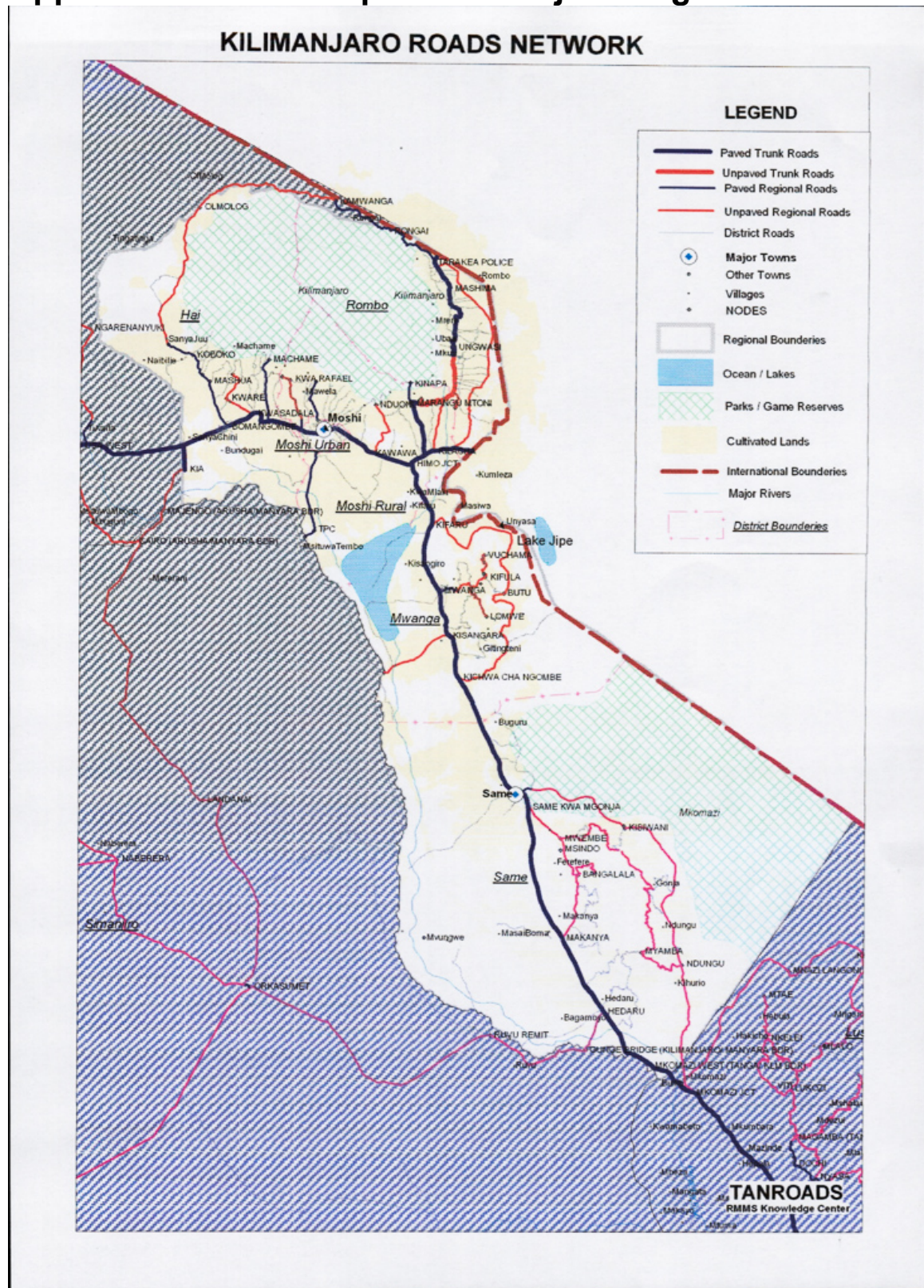
## 9 Going Forward

The WHO has recognized road traffic injuries as a global problem and recommended that governments take action, especially during this “decade of road safety.” Improved legislation, enforcement, and trauma services are the most crucial long-term steps in reducing road traffic fatalities, however education and activism have potential to make an immediate impact on public knowledge and behavior. Although policy and educational programs have been researched, evaluated, and implemented in many high-income countries they can be difficult to implement in low-income settings. Tanzania formulated a strategic national plan to improve road safety in 2009, however limited resources have restricted the government’s ability to fulfill the plan. The government has especially fallen short in its goals for better road safety education with no official curriculum endorsed for public schools.

Road traffic fatalities in Tanzania have steadily increased over the last decade and pedestrians have an especially high risk of injury. Tanzanians are in need of immediate, low-cost solutions. Prior research has shown that theatre-based interventions can provide an alternative tool for education and advocacy. Drama interventions can provide communities with easy to implement programming to quickly spread ideas and information about many health and community topics. Drama is not the solution to road traffic injuries, however this study demonstrates how a community can employ applied theatre as an effective modality in pedestrian education. With limited financial inputs, a community can address local problems using this applied theatre framework.

As art interventions are more thoroughly researched, they have become more time and resource heavy. Additionally, they have strayed from the democratic principles of the original Theatre for the Oppressed ideals. This research shows that there is still opportunity for amateur driven theatre interventions to positively change a community. The workshop and performance framework suggested here is ideal for communities in low-income settings. It equalizes participants regardless of literacy and can be taught across languages and cultures. The program empowers participants to become engaged community members. It is particularly useful in communities such as Moshi, Tanzania in which many people have no occupation to fill their day. Furthermore, this study indicates that an applied theatre workshop can be used to facilitate amateur community participants to self-identify the scope of a local problem, find solutions, and present those solutions back to the community through performance. Using simple acting exercises that have been developed by the theatre community for decades, non-professional community members learn the fundamentals of performance, public speaking, and communication. This process makes community participants integral to the intervention process; guides them to take ownership of the material; and encourages them to become active leaders in community development.

## Appendix A: Road Map of Kilimanjaro Region



## **Appendix B: KKUB Exercises**

### **Example of warm-up exercises**

Warm-ups always begin with a period of stretching using simple to more advanced yoga and tai chi stretches. Full body stretching is important to engage the individual physically and to prevent individuals from harming themselves during the course of the day's activities. Vocal exercises are also included in the warm-up. Vocal exercises help to improve participants' public speaking abilities and encourage people to vocalize in upcoming activities. Most warm-up exercises are also the first steps towards a more nuanced theatre activity.

#### *Name and gesture*

This exercise is a very common introductory game in acting classes, used in both professional and nonprofessional actor circles. The exercise is simple. Participants stand in a circle. The leader introduces herself by her first name and accompanies that name with a physical gesture. The rest of the participants repeat the name and gesture together. This process is repeated for each member in the circle.

This game can be repeated replacing names with abstract sounds. Participants are encouraged to be silly, to explore the high and low vocal registers, and to experiment with fricative and unusual sounds. The leader encourages abstract physical gestures to accompany the sound. This game

promotes physical and vocal expression while building group unity through shared humor. More advanced, abstract exploration is built upon this warm-up.

### **Example of stage one activity**

#### *Machine*

“Machine” is an abstract exercise that builds upon the name/sound and gesture sequence. It begins with an empty playing space and all actor-participants in the audience. When compelled to start, an actor moves to the playing space and begins a short, simple, repeatable gesture with repetitive sound. The actor will repeat the gesture/sound until the scene ends. Second actor “adds” to first actor’s gesture by creating a new gesture/sound that engages the first actor. This can be achieved through touching the first or not. The second actor repeats his gesture/sound. Third actor adds to the scene and so on until entire group is in the playing space. The leader allows this to continue until all participants are engaged in the playing space. The leader ends the “scene” and actors return to the audience. The leader engages in discussion, asking the participants to comment on what they felt they created and how their individual part contributed. The actors reflect on their differing interpretations of the action. This activity encourages ensemble building, improvisation, and communication.

### **Example of stage two activity**

#### *Part of a whole*

One actor moves into playing space. She imagines a specific environment and begins doing an activity with no sound that fits the setting she has

imagined. For instance, she is in the market and selling items. The rest of the group watches and when someone thinks they know where the first actor is, he joins the scene and begins doing another action related to the space. The activity continues until all actors have joined the scene. There is no speaking.

A second round of the activity changes the common theme from a location to a circumstance or issue. For instance, “it is raining.” Actors must quickly make imaginary situations relating to this theme important and real. The goals for the activity are exploring action and environment, imagination, and ensemble building.

### *Gallery*

The Gallery builds off of the Machine/Parts of a Whole sequence. This activity begins with discussion. The group brainstorms about road injuries, pedestrian and vehicle behavior. They volunteer thoughts about what they have observed and experiences they have had or have heard about. After everyone has had the opportunity to contribute, the leader asks for single words that come to mind about the issue. These words can be topics, themes, and emotions. The list is read back to the group.

The next step is silent. Everyone gets a partner—one is the “sculptor” and one is the “clay.” The leader demonstrates how to “sculpt:” by respectfully guiding the “clay person” into position or mirroring what you want your “clay person” to do. The leader calls out a word from the group list and the sculptor uses the clay person to represent the word. Note: there are no wrong ways to do

this. Once all clay people have been sculpted, the sculptors walk around the clay people and observe. After a period, the clay and sculptors trade places and the activity repeats with a new word.

The next step is group work. One sculptor works with multiple clay people. The resulting image does not have to be realistic, but may be scenically representative. The sculptors go from group to group and discuss what they see and how the static scenes make them feel. Again, the leader stresses that there is no right and wrong. She emphasizes that different people may have different reactions to the static scenes. This serves dual purposes; it helps to encourage participants to recognize multiple viewpoints, while also emphasizing how specific an image or idea needs to be to communicate to an audience. The activity goals are to encourage imagination, improvisation, and trust while building focus and exploring the issue.

### **Example of stage three activity**

#### *Freeze*

The exercise starts with two actors in the playing space. The leader gives the actors a starting prompt. This can be as general as simply the location of the characters or the nature of the relationship between characters. As the group explores the central issue, this prompt may come from ideas presented during earlier stages of KKUB. The actors begin improvising the scene based on the prompt. At some point the leader claps her hands to “freeze” the scene. During the freeze, a new participant replaces one of the frozen actors. The scene



continues with the new actor. This sequence continues allowing several participants to replace one another in a single scene. As the participants become comfortable and experienced with the exercise they may take over initiating “freeze” process.

### *Rewind*

This exercise is similar in nature to freeze and begins with two actors and a prompt. The actors start improvising the scene, exploring the situation and their characters’ responses. At the leader’s discretion, the leader calls out “Rewind!” and the actors reverse the action until the leader calls out “Play!” The actors then replay the action from wherever they are in the scene, this time making different choices.

## Appendix C: The Play

KKUB participants and the leader collaboratively created the play script. To accommodate different levels of literacy among KKUB participants, we did not use a written script. We decided to create the characters, plan the plot, and determine general dialogue for each moment. These choices were not explicitly written down, but discussed and rehearsed thoroughly. We clearly identified what messages each scene intended to send to the student audience. As we rehearsed, the group evaluated each scene and determined if that scene was appropriately delivering the identified messages.

Whereas during workshop exercises I encouraged participants to make different choices and explore alternatives, during rehearsal and performances of the planned plot, I encouraged consistency. Through the repetition of rehearsal we ended up with nearly consistent dialogue between play characters. In addition to solving the problem of varying literacy levels, this tactic also taught the performers to be quick on their feet and react to whatever different environments the schools gave us for the intervention.

The following is a plot synopsis and description of the final scripted performance piece used at each school intervention. All performances were delivered entirely in Kiswahili. As needed, the narrator used a simple call and response activity to gain the children's attention, whereby the narrator calls out "WEE!" and the children respond "WAH!" She repeats this during her moments on stage either to focus the children or to re-energize them as needed.. All *piki-*

*piki* (motorcycle taxi), cars, buses, and bicycles were represented through groups of actors who created unique shapes with their bodies. Some actors created the vehicle, while other actors portrayed the drivers and passengers.

## **Play Transcription**

### **Characters:**

Narrator  
Mother  
Father  
John  
Jessica  
Teacher  
Shopkeeper  
Student 1: Happiness  
Student 2: Haika  
Classmates  
*Piki piki* driver  
Passenger  
Bicyclists, Bus driver, Taxi drivers

The student audience is brought to the playing space/stage and finds a standing or seating place. Meanwhile the actors prepare the playing space with set pieces. On stage right is a table and four chairs representing the family home is set up. On stage left there is a set of benches or chairs set up to represent the school. Off stage a table is set up representing a shop store that will be brought on during a follow up scene.

The play begins with the narrator. She comes on to the stage and gains attention with a simple call and response with the audience. This gets the kids focused

and engaged in the activity. She introduces herself and welcomes the audience to a fun time to learn about being safe in the streets. The Narrator says, “We are going to watch a story about John and Jessica and their no-good-happy day.” The Narrator invites Happiness to the stage to show us more about street signs.

Happiness comes to the stage with several hand made replications of local street signs and repeats the Narrator’s call/response. With the audience’s attention, she asks the children if they have seen the signs before and what each sign means. Happiness allows several children a chance to respond to the questions before correcting or explaining each sign. She reiterates what each sign will mean if we see it during the play.

The Narrator returns to the stage and says, “Now we will see how John and Jessica begin their day.” The scene begins with an empty stage. Father enters the scene with a newspaper and calls to Mother for breakfast. As Mother enters, she calls out to John and Jessica waking them up and telling them not to be late for breakfast and school. Jessica is excited for school. She primps her clothes and hair and happily sits down to breakfast. John is very lazy and tired and drags his way into the scene. Mother reprimands John, telling him he should not be so lazy and he should be more prepared for school. Father and Mother tell the children that they should be careful on the way to school and give them tips to stay safe: they should hold hands when they cross the street; they should go straight to school and not play in the roads; they should walk on the side and so they can see traffic as it comes towards them. Jessica jumps up eager to get

to school on time but John is still very tired and complains. Father reprimands John for his insolence and sends them on their way.

Scene change: the family set is moved off stage and an actor comes to the space holding a stop sign.

John and Jessica continue walking from their house to school. When they get to the stop sign, they must cross the street. John is playing with a ball and is very distracted. Jessica yells at John, arguing with him that he should follow Mother and Father's instructions. Both are so distracted that they do not notice a *piki piki* picking up a passenger. The *piki piki* hurtles by John and Jessica as they cross the street scaring them and forcing them to leap back.

The Narrator calls out "FREEZE!" and the scene freezes in place. The Narrator comes out and says to the audience, "oh no what has happened to John and Jessica." She describes what the audience has just watched. She comments on the attitudes of both John and Jessica and the *piki piki* and worries that they will not make it to school. She asks what could John and Jessica have done differently so that this would not happen? She does not give the audience a chance to respond. She calls out to the actors "REWIND!" and the actors on stage jump into action, making sounds as if pronouncing their words backwards, and broadly gesturing as they move in reverse. When the Narrator calls "BEGIN!" the actors start moving forward again. This time, when Jessica yells at John to stop playing with his ball and to be more careful so that they can get to school on time, he listens to her. Because they are being more careful, they can see the motorcycle driver pick up his passenger and start coming towards them. The

motorcycle stops at the stop sign and John and Jessica carefully look both ways before crossing the street.

As John and Jessica make their way to the school set, the other actors get in place for the school scene, a shop keeper is created on the opposite side of the stage from the school set, and an actor comes out with a school street sign. The Narrator comes to the stage. She says, “Oh good! This time John and Jessica were careful when crossing the street. They looked both ways and didn’t get hurt. Now let’s see how they manage at school.”

The next scene begins with all of the students sitting at their desks or benches for class. Some children are good and paying attention, ready for the start of class, but some children, including John, are being disruptive. The teacher enters the class and calls attention to the students. The teacher proceeds to educate the class about being safe in the roads. The children each have their own characters and respond to the education in different ways through small vignettes of action. At one point, the teacher asks the children to take notes and John discovers that he has nothing to write with. The teacher reprimands John for being unprepared and orders him to go directly to the store to get a pencil. John is anxious and runs across to the store without paying attention. As he crosses he does not see the motorcycle coming towards him. The motorcycle, a creation of two actors as wheels and one actor as driver, swerves and crashes hurting the passenger and destroying the motorcycle (Figure 15). The “motorcycle” actors fall to the ground.

The Narrator calls out “FREEZE!” and the scene freezes in place. The Narrator comes out and says to the audience, “Oh no, what has happened to John?” She reiterates what the audience has just seen. She points out what John has done wrong and declares we must rewind and give John a second chance to be safe. She repeats the call “REWIND!” and all of the actors make many funny sounds and big gestures as they move backwards. The motorcycle puts itself back together and drives backwards. The shopkeeper exclaims in reverse, John jumps up strangely and moves backwards across the stage, while the teacher and students gesticulate wildly. The scene begins moving forward again with the teacher reprimanding John for his laziness. John carefully leaves the school and walks across the road to the shop. The shopkeeper reprimands John for being out of class during the school day and gives John some tips about being safe in the road. John carefully returns to school, following the shopkeeper’s advice.

The Narrator comes to the stage as the actors prepare for the next scene by moving the school set out of the playing space. She reviews the action we have just witnessed and asks the children to call out what John did differently and state whether he made the right choices. When the other actors have the next scene, a schoolyard, set up, the Narrator tells the children to watch what happens next.

During this scene all of the actor-children start playing different schoolyard games. Some are jumping rope; some are playing ball; some are playing hand games; and the teacher takes a tea break. As they play, Happiness and Haika start edging further out of the schoolyard and into the road. They decide to visit

the shopkeeper, and he is unhappy to see them. He sells them some treats but tells them they must return to school, repeating his tips for road safety.

Happiness and Haika are respectful to the shopkeeper but do not pay attention to his words and move haphazardly into the street. They do not see the motorcycle driver, and Happiness is nearly hit.

The Narrator calls out “FREEZE!” and the scene freezes in place. The Narrator comes out and says to the audience, “Oh no, poor Happiness!” She again reviews the action and asks the children, “What should Happiness and Haika have done differently?” She lets the children call out their ideas, and then calls for the actors to “REWIND!” All the actors move backwards, making even louder noises and gesticulating even more wildly—games go in reverse, people jump backwards over pretend rope, songs are “sung” in abstract sounds. When the action moves forward, Happiness and Haika decide to get treats and proceed to the store following all the road rules.

When they return, the Narrator enters and again asks the audience what they have seen. She lets the children respond while the actors set up for the next scene. The actors prepare the stage as a big road with a zebra crossing. All the actors, except John, Jessica, Teacher, Happiness, and Haika set themselves up as some type of vehicle. When they are ready, the Narrator says that coming home from school can be the hardest because there are many adults using the roads to get home from work. She tells the audience that some children must use very big roads, like Double Lane Road (the name of the most crowded local road



in Moshi with four lanes). She invites us to see how John and Jessica handle getting home.

The actor-vehicles begin travelling up and down the stage-road. They make many noises, representing loud engines, honking, and travelers. John, Jessica, the girls, and Teacher are traveling along the road. They approach the zebra stripes. John, Jessica, and their friends cross the road through the traffic. Teacher is texting on his phone and begins to cross the road, but neither he nor the bus see each other and it hits him. All the children and adults are very upset. Another driver calls out to the police, while people try to help Teacher. Wailing, John and Jessica rush off to home, and the seriously injured Teacher must be carried off. John and Jessica arrive at home, inconsolable and frightened. Mother tries to calm them down, but Father comes home as they continue to wail. Father and Mother calm down the children and learn of the tragedy. They comfort the children but wonder who will be able to lead the school and if John and Jessica will have to stay home.

The Narrator calls out “FREEZE!” and the scene freezes in place. The Narrator comes out to the audience quietly. She bemoans the awful accident and reiterates what has happened during the scene, noting that even adults sometimes are not as careful as they should be. She asks the audience what the people did wrong and what they should have done instead. She tells the audience, “let’s see if we can fix this so that everyone is happy and healthy” and calls out “REWIND!” While making many funny sounds, the parents reverse out of the home; the children wail backwards and back to the street; Teacher is

carried back on to the road where he comes back to life; and car-actors move backwards with their loud engines and honks until everything is reset. This time John, Jessica, Happiness, and Haika carefully cross at the zebra stripes when it is their turn. The vehicles stop at the zebra stripes as they should. Teacher is very attentive to the traffic and crosses, using the zebra stripes appropriately. John and Jessica make it home and talk to Mother about their day. When Father comes home everyone is happy.

The Narrator enters and reviews what we have seen and how happy everything has turned out when we all follow the rules and behave properly around vehicles and in the street. All the actors come out and introduce themselves, say who they played, and have a chance to give a short testimonial about being safe in the road or their experience with RTIs. The actors bow and wrap up by singing and dancing off the stage.

## Appendix D: Pedestrian Knowledge Survey

This is a translation of the knowledge survey that was administered on paper and read in Kiswahili. It was formatted on one side of A4 sized paper.

Name: .....

School: .....

Age: .....

[ ] Boy or [ ] Girl

1. It is safe to play on the road

True or False

2. When walking in a group, we should stay to the side of the road

True or False

3. We are supposed to cross the road in a straight line because the distance becomes shorter than when crossing diagonally

True or False

4. The safe way to cross the road is to run so that you will not get hit by a car

True or False

5. We are supposed to walk facing traffic so that we can see oncoming vehicles hence escape from any dangerous situation

True or False

6. We are not to hold hands when crossing the road

True or False

7. It is safe to play on the road because the driver usually blow horns when they see you

True or False

8. We are to cross the road at the corner junction or at the parked vehicles because the drivers can clearly see us

True or False

9. If there is no zebra crossing we are supposed to find a place where there is a straight line so as the drivers of vehicles can see us, and we can see oncoming vehicles

True or False

10. If there is no zebra crossing we are supposed to find a place where there is a clear vision

True or False

11. When we are walking in a group, it is ok to walk in the road because cars will see us and stop

True or False

## Appendix E: Sample of theatre-based interventions for health topics

Theatre based interventions involve either professional actors or amateur participants. They can be segregated into one of three models: a scripted play, a play with interactive or improvisation elements, or the drama workshop.

Study	Topic of interest	Model of theatre intervention	Conclusion
			<b>Positive Impact</b>
Harvey et al, 2000	HIV/AIDS	Professional, scripted play	Improved knowledge and attitudes among students [37]
Denman et al, 1995	HIV/AIDS	Professional, scripted play	Improved knowledge and attitudes among students [36]
Perry et al, 2002	Nutrition	Professional, scripted play	Improved food knowledge, change in intention to eat healthy [57]
Perry et al, 1999	Smoking	Professional, scripted play	Change in intention to smoke [38]
Belknap et al, 2013	Dating violence	Professional, scripted play, based on ethnography	Statistical increase in confidence in and intention to use non-violent strategies [45]
Kontos et al 2012	Care for brain injury patients	Professional, scripted play, based on ethnography	Qualitative impact on caregivers perceptions of patients [66]
Jonas-Simpson et al, 2012	Dementia	Professional, scripted play, based on ethnography	Qualitative impact on healthcare professionals perceptions of persons with dementia [67]
Rosenbaum et al, 2005	Patient care	Professional, scripted play, based on ethnography	Increased awareness among medical students of patients' experiences [68]
Tuokko et al, 2013	Dangerous older drivers	Professional, scripted play, based on ethnography	Change in attitudes and intention to drive among older women. No significant change among older men or other stakeholders.[44]
Mitchell et al, 2006	Dementia	Professional, scripted play, based on ethnography	Positive response in enjoyment of the play and changed attitudes on dementia [62]
Kamo et al, 2008	HIV/AIDS	Amateur, scripted play	Statistical increase in perception among adults that young people can be educators, no change in knowledge [59]
Middelkoop et al, 2006	HIV/AIDS	Amateur, scripted play	Statistical increase in VCT service uptake in intervention community vs control [60]
Pelto & Singh, 2010	Alcohol & HIV	Amateur, scripted play	Qualitative positive response to play, self-reported decrease in risky

			behaviors
Lieberman et al, 2011	Sexual activity	Interactive play, professional actors	Change in intention to have sex, increase in knowledge [50]
Cheadle et al, 2012	Eating and exercise	Interactive play, professional actors	Statistical increase in students' knowledge of nutrition and active living concepts [118]
Orme, 2002	Appropriate behavior	Interactive play, professional actors	Increase in children's ability to identify appropriate behavior [79]
Wright, 2006	Self perception	Workshop	Growth in self-concept using Piers-Harriss Children's Self-Concept Scales [58]
Nelson & Arthur, 2003	Drugs and alcohol	Workshop	Decrease in self reported drug/alcohol consumption [40]
Joronen et al, 2012	Bullying	Workshop	Statistical decrease in self-reported bullying behavior [61]
Baird and Salmon, 2012	Domestic violence and pregnancy	Workshop	Self-reported increase in awareness of domestic violence [70]
Yuen et al, 2011	Chronic conditions among older adults	Workshop	Improved General Well-Being Schedule and 36-Item Short-Form Health Survey scores [71]
Mattsson-Lidsle, 2007	Self perception among breast cancer survivors	Workshop	Positive response associated with process, reported decrease in stress, increase in reported happiness [63]
Douglas et al, 2000	Social skills, general health behavior	Workshop	Positive response associated with process, reported ability to make health decisions [64]
			<b>Mixed results or No Significant change</b>
Elliot & Gruer, 1996	HIV/AIDS	Professional, scripted play	Little impact on knowledge or attitudes [42]
Ponzetti et al, 2009	Sexuality	Professional, scripted play	No statistical difference between intervention and control on sex education [81]
Thrush, 1999	Smoking	Interactive play, professional actors	Weak association among girls intention not to smoke, no association among boys intention to smoke [39]
Basinga, 2009	HIV/AIDS	Professional, interactive play	Improved knowledge, but no statistical difference compared to control group [119]
Freeman et al, 2003	Behavior, social skills	Workshop	No statistical difference between intervention and control group [54]



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